John Deere
4320
Tractor

Operator's Manual
OM-R48277
Issue H0

To the Operator

This new tractor was carefully designed and manufactured to give years of dependable service. To keep it running efficiently, read the instructions in this operator's manual. Each section is clearly identified so you can easily find the information you need—whether it is operation, lubrication, or service.

Read the Contents to learn where each section is located. Use the alphabetical index on pages 75, 76, and 77 for fast reference.

"Right-hand" and "left-hand" sides are determined from a seated position in the operator's seat.

Record the serial numbers in the spaces provided on page 74. Your dealer needs this information to give you prompt, efficient service when you order parts. If your tractor requires replacement parts, go to your John Deere dealer where you can obtain Genuine John Deere parts—accept no substitutes.

The warranty on this tractor appears on your copy of the purchase order which you should have received from your dealer when you purchased the tractor.

⚠ This safety alert symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

Contents

Page

CONTROLS AND INSTRUMENTS 2

OPERATION 3

SAFETY RULES 35

FUELS AND LUBRICANTS 37

LUBRICATION AND PERIODIC SERVICE 39

SERVICE 49

TRACTOR CAB 61

TRACTOR STORAGE 64

TROUBLE SHOOTING 66

SPECIFICATIONS 73

INDEX 75

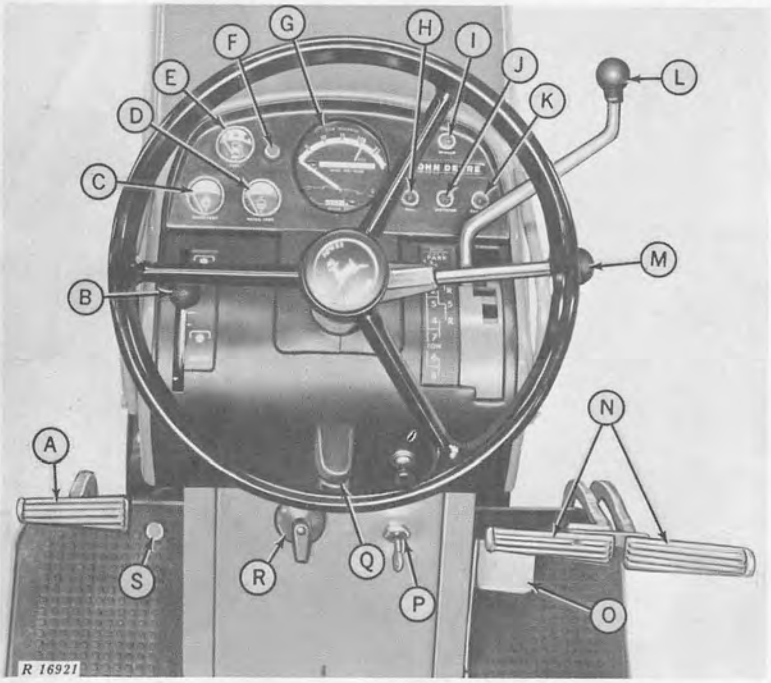
REVISED INFORMATION

Engine Crankcase Oil Capacity
The engine crankcase oil capacity with or without filter change should be 17 U.S. quarts.

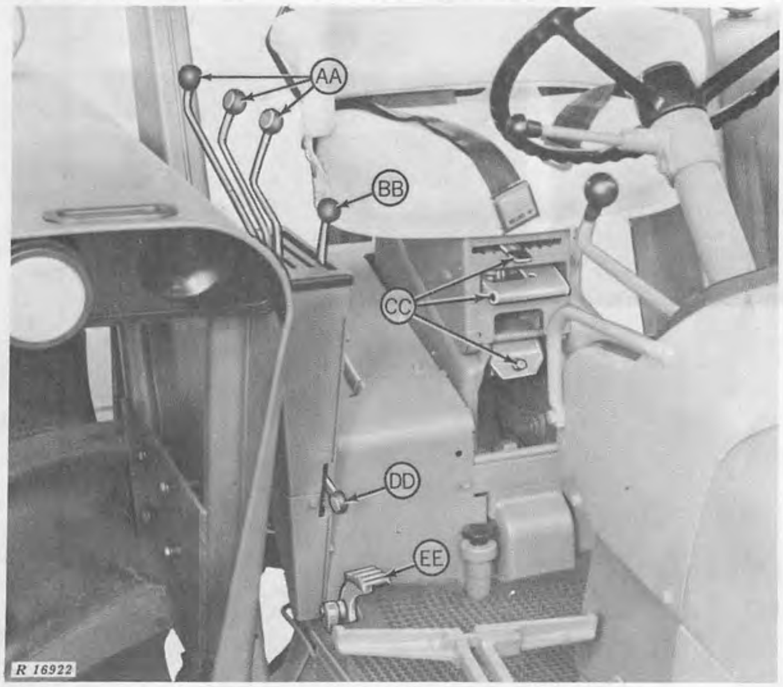
On 4320 tractors, change this oil specification on pages 40, 41, 45 and 73.

Controls and Instruments

Before attempting to operate your new tractor, become familiar with the location and purpose of its controls and instruments. Additional information will be found on the page number following the control or instrument. Worldwide graphic symbols are used to assist identification and operation.



A-Clutch Pedal (page 9)
B-Power Take-Off Clutch Lever (page 33)
C-Transmission Oil Temperature Gauge (page 10)
D-Coolant Temperature Gauge
E-Fuel Gauge
F-Speed Indicator Knob (page 9)
G-Speed-Hour Meter (pages 9 and 39)
H-Alternator Indicator Light (page 3)
I-Hi-Beam Indicator Light (page 19)
J-Air Cleaner Indicator Light (pages 3 and 41)
K-Oil Pressure Indicator Light (page 3)
L-Shift Lever (page 9)
M-Hand Throttle (page 6)
N-Brake Pedals (page 12)
O-Foot Throttle (page 7)
P-Key Switch (pages 3 and 7)
Q-Ether Starting Fluid Adapter (page 4)
R-Light Switch (page 20)
S-Dimmer Switch (page 20)



AA-Remote Cylinder Operating Levers (page 29)
BB-Rockshaft Control Lever (page 21)
CC-Seat Controls (page 8)
DD-Rockshaft Selector Lever (page 22)
EE-Differential Lock Pedal (page 11)

Operation

Complete instructions for operating your tractor safely and efficiently are given on the following pages. By following these directions carefully, you can be sure that you are taking full advantage of the many features built into your tractor.

OPERATING THE ENGINE

PRESTARTING CHECKS

Perform the following checks and services before starting the engine for the first time each day:

(1) Check the engine crankcase oil level - see page 43.

(2) Check the radiator coolant level - see page 43.

(3) Check the fuel filter sediment chamber. See page 50.

(4) Lubricate the wide-swing drawbar, draft link support, front axle pivot pins, steering knuckle pins, and tie rod ends. See page 44.

(5) Grease the front wheel bearings if the tractor has been operated in extremely wet or muddy conditions - see page 44.

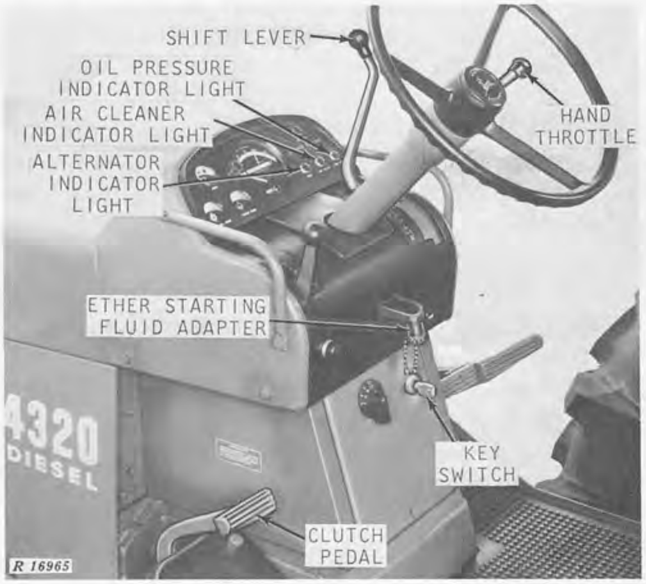
(6) Make sure the fuel shut-off valve on the fuel tank is open. See page 50.

STARTING THE ENGINE

NOTE: If the prevailing temperature is 40°F. or lower, it may be necessary to use a cold weather starting aid to start the engine (page 4).

Perform the Prestarting checks listed above.

(1) See that the shift lever is in the "PARK" position. Depress the clutch pedal.


SHIFT LEVER
OIL PRESSURE INDICATOR LIGHT
AIR CLEANER INDICATOR LIGHT
ALTERNATOR INDICATOR LIGHT
HAND THROTTLE
ETHER STARTING FLUID ADAPTER
4320 DIESEL
KEY SWITCH
CLUTCH PEDAL
R 16965

Starting Controls

(2) PLACE THE HAND THROTTLE IN THE 1200 RPM POSITION, approximately one-third of its travel downward.

(3) Turn the key switch clockwise to the first position. The alternator and oil pressure indicator lights should glow. Turning the key switch further to the start position should cause the air cleaner indicator light to glow. If any light fails to glow, turn off the key switch and determine the cause.

(4) Turn the key switch all the way to the right to start the engine. Do not operate the starter for more than 30 seconds at a time. To do so may overheat the starter. If the engine does not start the first time, wait for a minute or two before trying again. If it does not start after four attempts, see "Trouble Shooting."

If the key switch is released before the engine starts, wait until the starter and the engine stop before trying again. This will prevent possible damage to the starter.

Before the starter will operate, the shift lever must be in "PARK" or neutral.

(5) After starting, operate the engine at approximately 1000 rpm. Do not accelerate or apply a load until the engine oil pressure indicator light has gone out. In cold weather or after the engine has been idle for several weeks, idle the engine for several minutes at speeds below 1000 rpm to insure turbocharger lubrication before accelerating or applying a load.

(6) After the engine starts, the indicator lights should go out. If a light continues to glow after the engine has been running 10 seconds, stop the engine and determine the cause.

Should the engine be killed when operating under load, immediately restart the engine to prevent overheating caused by stopping the flow of oil for turbocharger cooling and lubrication.

When starting the engine after changing oil or after the tractor has been in storage, disconnect the injection pump electrical shut-off wire, and crank the engine with the starter until the engine oil pressure indicator light goes out or for no more than 30 seconds. Reconnect the injection pump electrical shut-off wire and start the engine.

R 2206

CAUTION: Before starting the tractor engine, be sure there is plenty of ventilation. Never operate the tractor in a closed shed or garage.

COLD WEATHER STARTING AIDS

For cold weather starting, the tractor may be equipped with an ether starting fluid adapter. Other starting aids are available from your John Deere dealer.

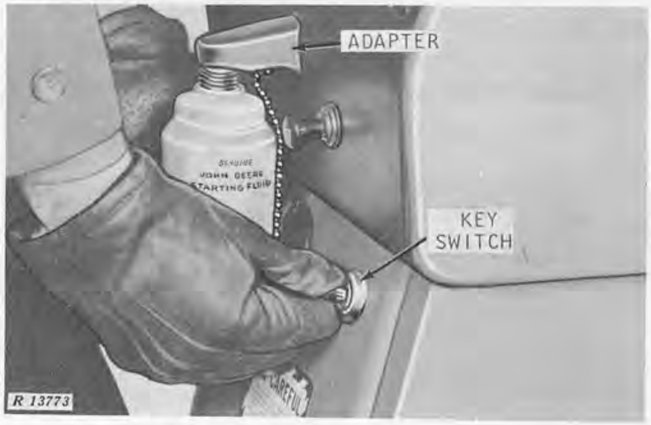
These aids are effective at low temperatures, only when the engine is otherwise operating satisfactorily. They will not correct such deficiencies as low battery charge, crankcase oil of heavy viscosity, and high electrical resistance which may prevent the engine from starting.

Ether Starting Fluid Adapter

This adapter is used to inject atomized starting fluid into the engine air intake system. Pressurized cans of starting fluid are available from your John Deere dealer.

CAUTION: Ether starting fluid is highly flammable.

To use the can of starting fluid, remove the safety cap and plastic spray button from the can. Remove the cap from the adapter and position the can under the adapter.



Injecting Starting Fluid

To inject a shot of starting fluid, momentarily push up on the can.

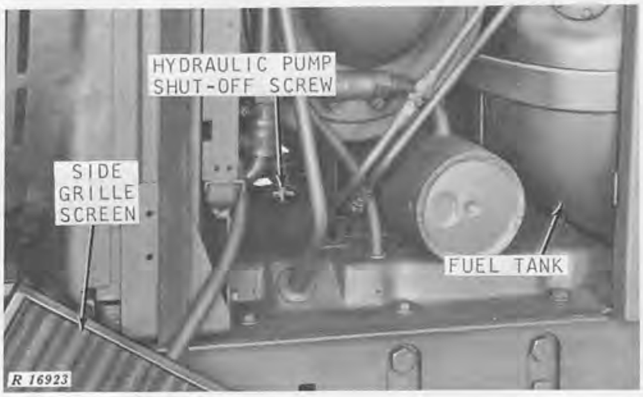
IMPORTANT: To avoid damage, turn engine with starter one or two revolutions before injecting starting fluid. Inject starting fluid only while the engine is turning.

Relax pressure on the can between shots of starting fluid. Stop injecting fluid after the engine starts. If the engine begins to die during the first few minutes of operation, inject another shot of fluid. When the engine is operating satisfactorily, remove the can from the adapter and replace the safety cap on the can.

Be sure to install the cap on the adapter when it is not in use. This will prevent dust from being drawn into the engine.

Store starting fluid cans where they will not be subject to extreme cold or warm temperatures. For best results, store fluid at room temperature.

Hydraulic Pump Shut-Off



Hydraulic Pump Shut-Off Screw

If the tractor has a hydraulic pump shut-off screw, the starter speed may be increased during cold weather by shutting off the hydraulic pump so it will not build up pressure. This will also prevent inadvertant operation of the Power Front-Wheel Drive.

Turn the shut-off screw in (clockwise) one turn with a screwdriver. Then turn the screw in by hand until resistance is felt. Turn the screw in one more turn. After the engine has started, use a screwdriver to back the shut-off screw all the way out (counterclockwise with a screwdriver). Stop the engine before backing out the screw on tractors with Power Front-Wheel Drive.

NOTE: Oil will leak past the shut-off screw if it is not backed all the way out against the internal stop.

Electric Crankcase Oil and Coolant Heaters

To facilitate cold weather starting, 115-volt electrical crankcase oil and in-block coolant heaters are available from your John Deere dealer.

The crankcase oil heater is a 240-watt unit that may be installed in the front right-hand corner of the engine oil pan.

The in-block coolant heater is a 1000-watt unit that is on the left-hand side of the engine.

⚠ **CAUTION: To avoid shock or hazardous operation, always use a three-wire heavy-duty electrical cord equipped with three-wire connectors. If a two-to-three contact adapter is used at the wall receptacle, always connect the green wire to a good ground.**

The use of either one of these heaters will reduce drag on the engine to improve starting.

Under normal conditions, up to 5 hours may be required at temperatures between 0° F. and 20° F. or up to 8 hours for temperatures below 0° F.

Additional Battery

Cold weather starting can be made easier by connecting an additional 12-volt battery in parallel with the two 6-volt batteries on the tractor.

⚠ **CAUTION: Gas given off by batteries is explosive. To avoid injury or battery damage, avoid sparks near the batteries.**

Make sure all electrical switches or accessories are turned off and make the last connection or the first disconnection at some point away from the battery.

Connect a jumper cable of 000 size to the positive (+) post of a 12-volt booster battery and to the POSITIVE (+) post of the right-hand tractor battery that is connected to the starter. Connect one end of the other jumper cable to the negative post of the booster battery and to a good ground on the tractor frame away from the battery. Never connect jumper cables to pipes or thin sheet metal. (The negative post of the left-hand battery is grounded.)

IMPORTANT: Reversed polarity booster battery connections may damage the alternator or electrical wiring.

See your John Deere dealer for additional booster battery information.

TRACTOR WARM-UP PERIOD

Always be sure the tractor is warmed up properly before operating under a full load.

A good way to do this is first to idle the engine at about 1500 rpm for 5 minutes and then operate it at about 1900 rpm for another 5 minutes.

It is good practice to operate the tractor for the first 30 minutes in a lower gear then is normally required for the load. This gives the oil a chance to circulate freely and prevents undue wear on engine or transmission parts.

ENGINE IDLING

Avoid unnecessary engine idling. Prolonged engine idling may cause the engine coolant temperature to fall below its normal range. This in turn causes crankcase oil dilution, due to incomplete fuel combustion, and permits formation of gummy deposits on valves, pistons, and piston rings. It also promotes rapid accumulation of engine sludge and unburned fuel in the exhaust system.

When the tractor is to remain idle for a considerable length of time, stop the engine.

ENGINE SPEEDS

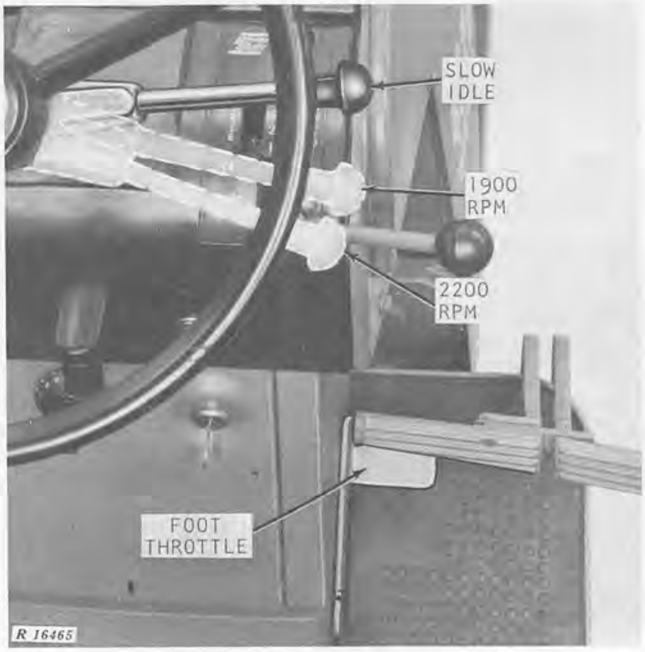
The tractor engine is designed to operate at working speeds ranging from 1500 to 2200 rpm. The engine can be operated at any speed in the working range to meet various operating conditions. Operate the engine at 1900 rpm to obtain the ASAE Standard PTO speeds.

In addition, engine speeds may be varied up to 2500 rpm to save you time when traveling on highways or on smooth-surfaced roads.

Normal slow idle speed is approximately 800 rpm.

The engine speeds of 1900, 2200, and 2500 rpm are speeds when under full load. At light or at no-load conditions, the speeds may rise to approximately 2150, 2400, and 2650 rpm respectively. See page 47 for no-load engine speeds.

Using Hand Throttle



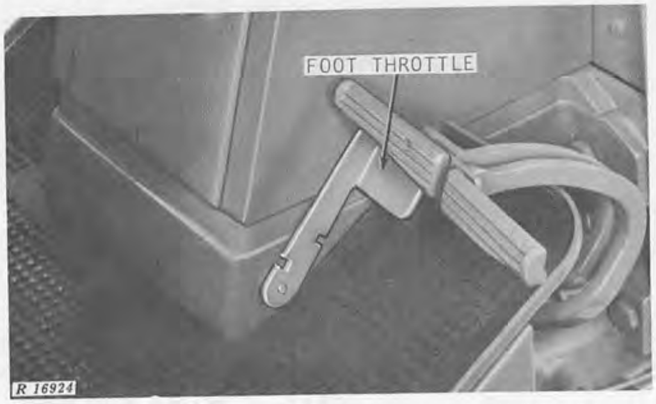
Range of Hand Throttle Positions

Use the hand throttle to select slow idle or any of the variable governed speeds from 1500 to 2200 rpm.

Push the throttle upward to obtain the slow idle speed of 800 rpm. To obtain the 1900 rpm load speed, pull the throttle downward to the first stop. Placing the throttle halfway between slow idle and 1900 rpm gives the 1500 rpm speed. Engine speeds between 1500 rpm and 1900 rpm may be selected by moving the lever between these two positions.

To obtain working speeds above 1900 rpm, pull out on the knob at the end of the hand throttle. With the knob pulled out, pull the throttle downward as far as it will go. This is the 2200 rpm load speed position. Engine speeds between 1900 rpm and 2200 rpm may be selected by moving the lever between these two positions.

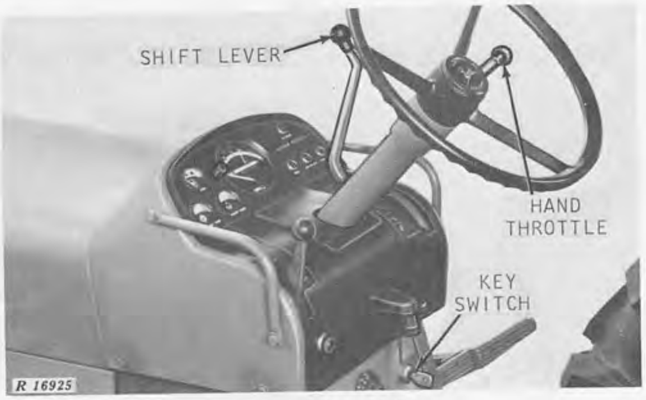
Using Foot Throttle



The foot throttle is used to obtain engine transport speeds or to raise engine speed momentarily. When the foot throttle is pushed all the way downward, the engine operates at 2500 rpm load speed.

NOTE: The foot throttle should not be used to increase the normal engine working speed.

STOPPING THE ENGINE



Stopping Controls

Place the shift lever in "PARK" and allow the engine to idle from 3 to 5 minutes to cool the engine and turbocharger.

Lubrication and cooling of the turbocharger and some engine parts is provided by the engine lubricating oil. Therefore, sudden stopping of a hot engine may allow some parts to overheat and cause possible damage.

After idling the engine for a few minutes, move the hand throttle up to the slow idle position and turn the key switch off.

After stopping the engine, remove the key from the switch to prevent tampering an unauthorized operation. Removing the key also prevents the switch from being accidentally left in the "on" or the "accessory" position and causing battery discharge.

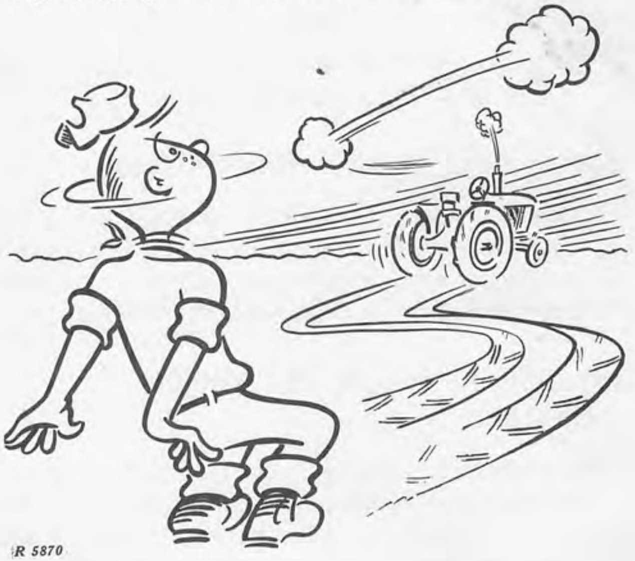
Before dismounting, be sure all equipment is lowered to the ground, the light switch and other accessory switches are off, and the transmission is in "PARK."

BREAKING IN THE ENGINE

If the coolant temperature rises to the warning zone on the gauge, shift to a lower gear to reduce the load on the engine. Be sure to follow the special break-in lubrication instructions given on page 39.

With the following exceptions, the engine is ready for normal operation:

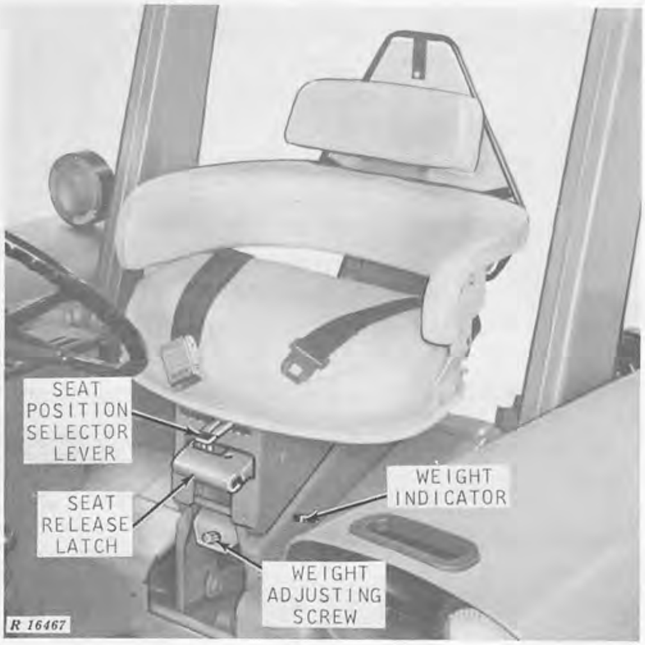
During the first 20 hours, do not use the foot throttle. To facilitate break-in, avoid prolonged periods of engine idling for the first 100 hours of service.



⚠ **CAUTION: Whenever the tractor is stopped, place the shift lever in the "PARK" position BEFORE DISMOUNTING. Never dismount from the tractor when it is in motion.**

OPERATING THE TRACTOR

SEAT



Seat Controls

The deluxe foam-padded suspension seat contains a steel compression spring and shock absorber to provide "Float-Ride" comfort.

Use only warm water and a mild soap to clean the seat cushions. Never use strong solvents.

Moving Seat to Upper Rear Position

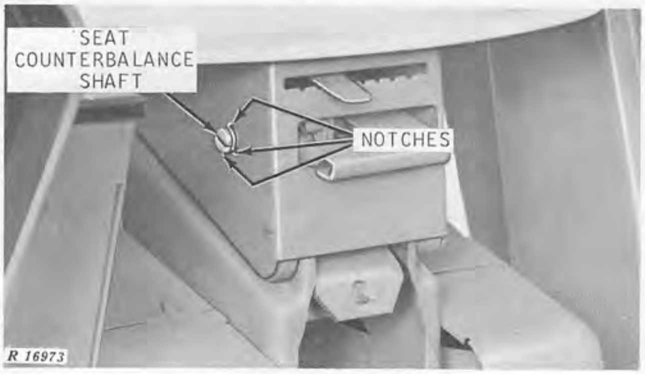
To move the seat up and back, stand up and lift the seat release latch. A counterbalance spring will move the seat to the upper rear position. Sit down to return the seat to the normal preset operating position.

Adjusting for Height and Weight of Operator

The seat can be adjusted to the height of the operator. With the seat in the upper rear position, shift the seat position selector lever between "short" and "tall" until the controls can be operated comfortably when you are seated.

The tension of the steel compression spring can be adjusted to conform to your weight. This enables the seat to "float" when you are traveling over rough ground. To make this adjustment, turn the weight-adjusting screw clockwise or counterclockwise until the indicator in the left-hand side of the seat conforms to your weight.

Adjusting Counterbalance Spring



Seat Counterbalance Shaft

If the seat does not move fully to the rear when unlatched, adjust the counterbalance spring. With the seat in the upper rear position, insert a screwdriver in the counterbalance shaft slot. Push in to unlatch the shaft and turn the shaft counterclockwise. Align the latch in the end of the shaft with one of the pair of notches. Pull the screwdriver outward so the latch will engage the notches.

ROLL-GARD, SEAT BELT, AND CANOPY

Roll-Gard, Seat Belt, and Canopy

A protective roll-gard with seat belt may be ordered for your tractor. A canopy that fits on top of the roll-gard and a weather enclosure are also available. See page 60 for more information.

CAUTION: Under almost all operating conditions:

1. **Use of the seat belt with the optional John Deere Roll-Gard is recommended.**
2. **Use of a seat belt without roll-over protective equipment is not recommended.**

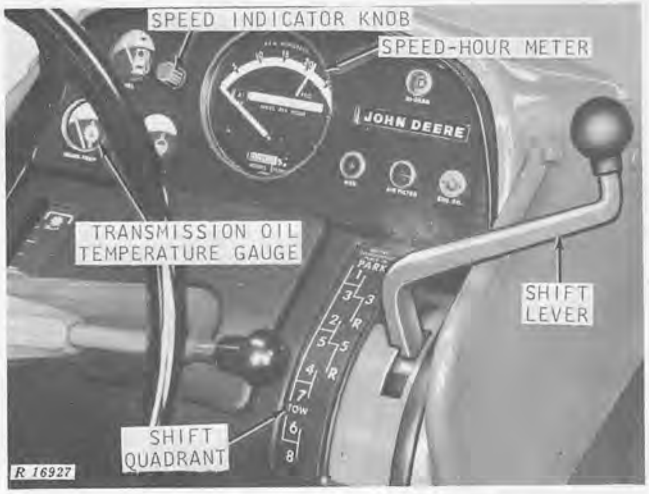
SELECTING GROUND SPEED

The tractor has eight forward speeds and two reverse speeds for each of the throttle positions that may be used. These combinations enable the operator to balance speed and power for maximum economy and allow him flexibility to meet varying working conditions. For example, for a given ground speed the operator may choose to work in a low gear at high engine speed for maximum reserve power or in a higher gear at a lower engine speed for maximum fuel economy.

Examples of the ground speeds at which the tractor will travel are shown below. Engine working speeds may be varied between 1500 rpm and 2200 rpm, and engine transport speeds may be varied up to 2500 rpm. Tractor ground speeds shown in the chart are only for engine speeds of 1500, 1900, 2200, and 2500 rpm.

Turn the speed indicator knob on the instrument panel until the gear selected shows on the speed indicator. The speed-hour meter pointer will now indicate the tractor ground speed in miles per hour.

Avoid overloading the tractor. When this occurs, operate in a lower gear. If moving the throttle slightly will change engine speed, the engine is not overloaded or lugging. Overloading causes undue strain on parts, eventually resulting in poor operation and unnecessary repair and expense.



Speed Indicator Knob and Shift Lever

SYNCRO-RANGE TRANSMISSION

Shifting Between Stations

The shift quadrant has four shift stations. Stations No. 1 and 2 have two forward speeds and one reverse speed. Stations No. 3 and 4 have two forward speeds only.

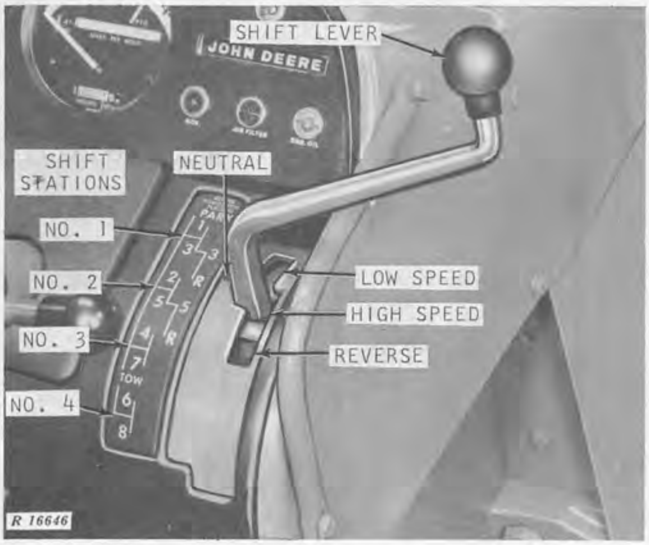
With the tractor stopped and the clutch pedal depressed, move the shift lever to a neutral position at the left side of the quadrant. Then move the shift lever to the station that has the desired speed. Move the lever to the right and into the speed desired.

TRACTOR GROUND SPEED IN MILES PER HOUR

NOTE: The following ground speeds are for 18.4-34 rear tires with a 29.5-inch loaded radius. 13.6-38 and 15.5-38 tires are 4% slower; 16.9-38, 3% faster; 18.4-38, 5.9% faster; 20.8-34, 3.7% faster; and 23.1-30, 1% faster.

Gear	Hand Throttle Operating Range			Maximum Foot Throttle Speed
	1500 rpm	* 1900 rpm	2200 rpm	2500 rpm
1st	1.3	1.6	1.9	2.1
2nd	2.0	2.6	3.0	3.4
3rd	2.7	3.4	4.0	4.5
4th	3.5	4.4	5.1	5.8
5th	4.4	5.5	6.4	7.3
6th	5.7	7.2	8.3	9.5
7th	7.4	9.4	10.9	12.4
8th	12.0	15.3	17.7	20.1
1st reverse	2.6	3.3	3.9	....
2nd reverse	4.2	5.3	6.2	....

** 1900 engine rpm gives the ASAE Standard 540 or 1000 rpm PTO speed. Some PTO-driven implements are operated at other speeds. See the implement operator's manual for detailed instructions.*



Syncro-Range Transmission Shift Quadrant

Gradually release the clutch pedal to take up the load smoothly.

To prevent unnecessary wear, never "ride" the clutch or brake pedals by resting the feet on the pedals.

Shifting Within Stations

With the clutch pedal depressed, the transmission can be shifted from one forward speed to the other forward speed within the same station while the tractor is in motion. For instance, you can shift between 1st and 3rd gears, 2nd and 5th gears, 4th and 7th gears, and 6th and 8th gears without stopping the tractor.

IMPORTANT: Stop tractor before shifting from a forward speed to a reverse speed to prevent damage to the transmission.

Transmission Temperature Gauge

If the pointer on the temperature gauge goes into the red zone, stop the tractor and clean all dirt and trash from the grille screens and the transmission-hydraulic oil cooler core. Check and if necessary, fill the transmission-hydraulic system to its proper oil level. A clogged filter can also cause overheating. If the difficulty continues, call your dealer. Do not operate the tractor when the temperature pointer is in the red zone.

PARKING THE TRACTOR

Be sure the tractor is STOPPED before placing the shift lever in the "PARK" position.

Move the shift lever to a neutral position at the left side of the quadrant. Then push the shift lever all the way into "PARK."

To shift from "PARK" when the tractor is not parked on a steep incline, simply move the shift lever rearward to the station desired. When the tractor is parked on a steep incline it may be necessary to do the following to relieve the load on the transmission park lock. Depress the clutch pedal and pull the shift lever rearward against spring pressure into the No. 1 shift station. Then shift into a forward or reverse gear that will move the tractor UP THE INCLINE. Very slowly engage the clutch and the transmission will shift out of "PARK."

TOWING THE TRACTOR

⚠ **CAUTION: Never tow the tractor at high speeds. Tow tractor with the engine running to maintain power operation of steering and brakes.**

When towing the tractor, the transmission-hydraulic system should be at the "FULL" mark. If the front end is raised, add one gallon of oil for each six inches the front end is raised. Be sure differential lock is disengaged.

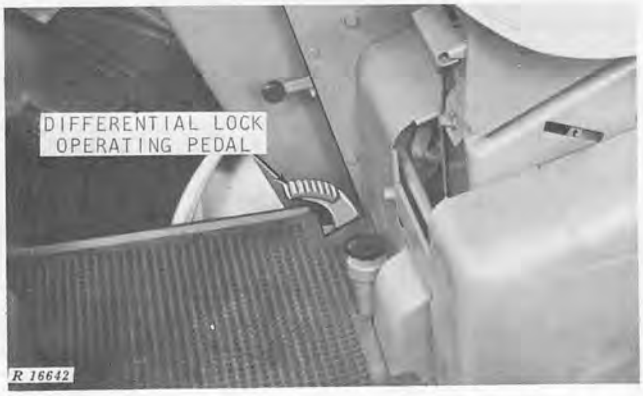
IMPORTANT: Always place the shift lever in "TOW." Do not attach towing means to front wheel knuckles or steering mechanism.

FOR YOUR OWN PROTECTION

DON'T TAKE A CHANCE!

X 1289

DIFFERENTIAL LOCK



Differential Lock Operating Pedal

Your tractor may be equipped with a differential lock that will turn both rear wheels at the same speed. This prevents the usual loss of power when one wheel is slipping.

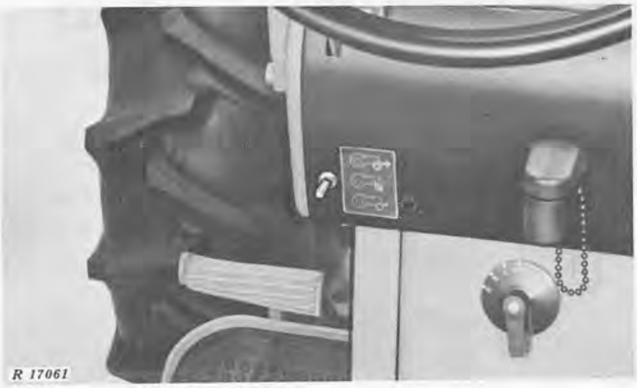
When one wheel starts to slip or whenever desired, engage the differential lock by depressing the operating pedal located at the right-rear side of the platform. When no longer required and before turning the tractor, disengage the differential lock by depressing one or both brake pedals. The front wheels should be in the straight ahead position when disengaging or engaging the differential lock.

CAUTION: Do not operate the tractor at high speeds or attempt to turn the tractor with the differential lock engaged.

POWER FRONT-WHEEL DRIVE

The Power Front-Wheel Drive has a fixed displacement, axial piston hydraulic motor and a planetary transmission in each front wheel. The tractor main hydraulic pump furnishes hydraulic power for the front wheels.

Use the Power Front-Wheel Drive in poor traction conditions or when needed to improve steering control. The drive can be engaged "on the go" or when the tractor is stopped by moving the drive operating switch up to high torque position (for maximum pulling power) or down to low torque position (when less power is required).



Power Front-Wheel Drive Operating Switch

Always move the switch to the center (off) position when the drive is not needed. Do not engage the drive when hitching to drawn equipment. Do not attempt to operate the tractor with the front-wheel drive only.

Whenever the clutch pedal is depressed, a switch disconnects the drive.

When the operating switch is moved up or down, the drive is automatically engaged or disengaged as necessary to synchronize the front drive when the shift lever is moved to the various transmission speeds. In low torque switch position the drive will be engaged in 1st through 6th forward speeds and in all reverse speeds. In high torque position, the drive will be engaged in 1st through 4th forward speeds and in all reverse speeds.

When a front wheel slips and a "differential lock action" is needed, move the switch down to the low torque position. This connects the hydraulic motors in series.

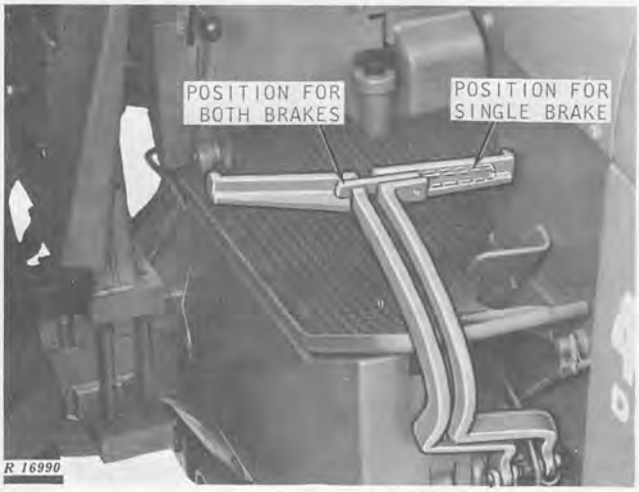
CAUTION: Always place transmission in PARK, lower implements to the ground, and shut engine off before dismounting. Always start the engine from the operator's seat. Shutting off the hydraulic pump as instructed on page 5 will prevent accidental tractor movement by the front wheels.

POWER STEERING AND BRAKES

The tractor is equipped with full hydraulic power steering and power brakes so that a minimum of effort will operate the tractor.

The brake accumulator supplies oil to the brakes for an emergency application immediately after the engine is stopped.

To assist in making sharp turns, apply the brakes individually or, to stop the tractor, apply both brakes simultaneously. When traveling at high speeds, couple the pedals together as shown and use a light pressure on the pedals.



Brake Pedals Coupled Together

TOWED LOADS

CAUTION: Towed loads that weigh more than twice the weight of tractor should have brakes. If not, reduce speed and avoid inclines.

CAUTION: Fast driving causes many accidents. Couple the brake pedals together and always drive at a safe speed.

FRONT WHEEL TREAD

Double Front Wheels

The double front wheel tread may be set at the narrow spacing or at the wide spacing by reversing the dish of the front wheels.

To change the double front wheel spacing, unbolt the wheels from the hubs, reverse the wheels and tighten bolts to 85 ft-lbs torque.

Wide Front Axles

Adjustable-Tread Front Axle

The adjustable tread front axle is adjustable in 2-inch steps (the last widest step is 4 inches). The chart below lists the available tread ranges. Reverse the wheel "dish" in the same manner as for double front wheels.

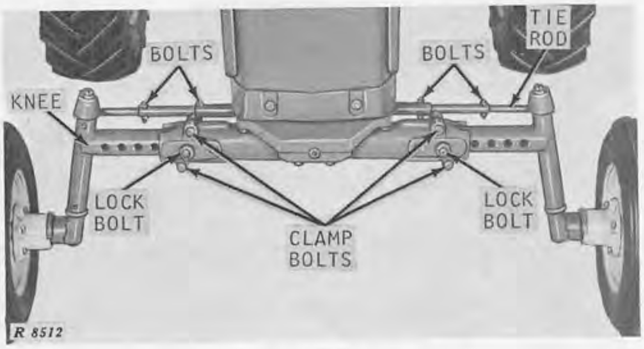
Tire	Wheels Dished in	Wheels Dished Out
7.50-15 7.50-16 7.50-18	50-3/4″ to 74-3/4″	55-7/8″ to 79-7/8″
10.00-16 11.00-16	Not recommended	54-1/2″ to 78-1/2″
11L-15	52-3/4″ to 76-3/4″	53-7/8″ to 77-7/8″
11.2-24 12.4-24	. . . .	64″ to 82″
12.4-24 C&R	. . . .	66″ to 82″

For extra wide tread front axle, add 8 inches to each tread dimension.

To adjust the tread width, position the wheels straight ahead and jack up the front end of the tractor.

IMPORTANT: Do not place jack under engine oil pan or, on Power Front-Wheel Drive tractor, under the hose guard at the front axle.

To change the adjustable tread front axle, remove the tie rod lock bolts. Loosen the front axle clamp bolts and drive the lock bolts from the front axle hous-



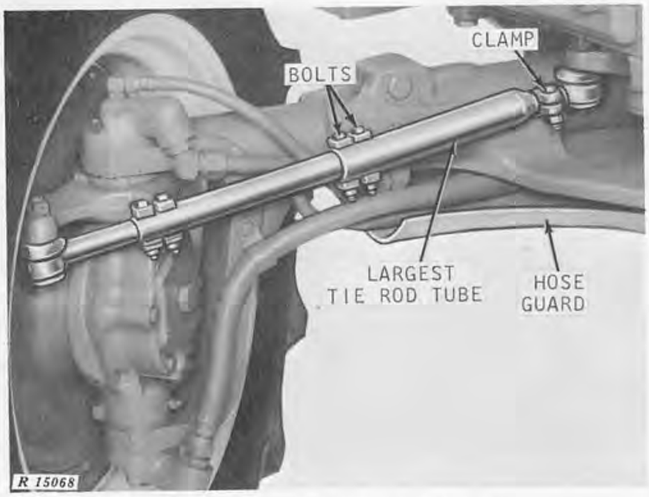
Front Axle Tread Adjustment

ing. Move the front axle knees in or out to the desired tread width. Install the lock bolts and tighten the clamp bolts to 300 ft-lbs torque. Position the tie rod tubes so the middle tubes are equally spaced with the wheels straight ahead. Install the tie rod bolts with the nuts down. Coat unpainted surfaces with rust preventative. Check toe-in.

If equipped with a Power Front-Wheel Drive, the tractor's power steering motor may be used to move the wheel assembly by resetting the tie rod length and using the full steering arm travel. After adjusting the tread, be sure the small bleed hose is free and not kinked or pinched so as to prevent oil flow.

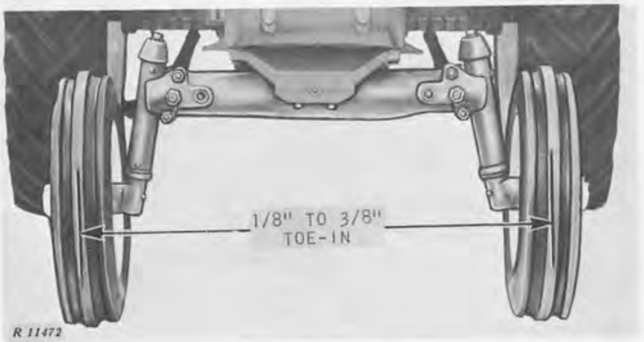
Fixed-Tread Front Axle

A fixed tread front axle with 7.50-18 tires has a tread of 55-1/2 inches with the wheels "dished" inward and 60-3/4 inches with the wheels "dished" outward. With 10.00-16 tires, the wheels are only mounted in the "dished" out position and the tread is 59 inches.



Tie Rod (Power Front-Wheel Drive)

Toe-In Adjustment



Correct Toe-In

Toe-in of the front wheels on a tractor with wide front axle should be 1/8 to 3/8 inch.

To check toe-in, turn the steering wheel until the front wheels point straight ahead, parallel to the center line of the tractor. Measure the distance from tire to tire, first at the front of the tires and then at the rear. Front measurement should be 1/8 to 3/8 inch less than rear measurement.

To adjust toe-in on adjustable tread axles, remove the bolts from the largest tie rod tubes and loosen the clamps on the inner end of the tie rods. On fixed tread axles, loosen the tie rod clamps.

Turn the tie rod tubes in or out until toe-in is correct. Replace the bolts and tighten the clamps. Do not overtighten the clamps. The tie rods should be of equal length so that the tractor will turn as sharp to the left as it will to the right.

REAR WHEEL TREAD

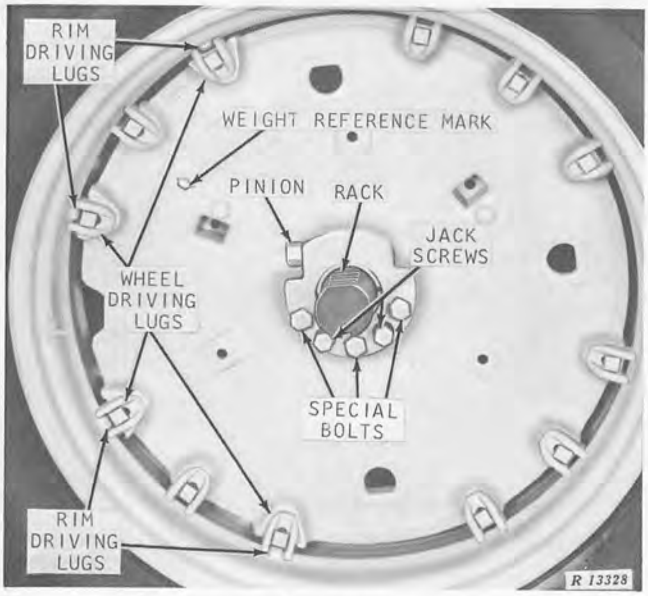
Limit rear wheel tread to 110 inches when pulling heavy loads (in first, second, and third gears) that generate high weight transfer loads or draft loads.

Regular and Offset Wheels

The tread can be changed by moving the wheel on the axle by the rack and pinion, by reversing the wheel on the axle, or by changing the rim position on the wheel.

Rack and Pinion Method

This method of adjustment is accomplished by turning a pinion gear in the wheel hub that engages a



Rack and Pinion Adjustment

rack on the axle. See the illustration. This adjustment may be made with one or two wheel weights installed.

With the rack on the axle up, loosen the three special bolts 3/8 inch. Loosen the tapered sleeve by turning the two jack screws clockwise until the inner edge of the hex. surface is flush with the hub surface. Jack up the tractor and turn the pinion gear to slide the wheel in or out on the axle.

After the desired tread is obtained, back the jack screws all the way out against the stop. Do not force. Lubricate the threads and tighten the special bolts securely (300 ft-lbs torque).

IMPORTANT: Setting the wheel too close to the rear axle housing may damage the pinion when the hub is tightened. Also, be sure that the tire or weights will not rub the tractor. The jack screws must be free to turn after the hub is tightened.

Center of Tractor

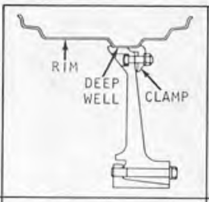
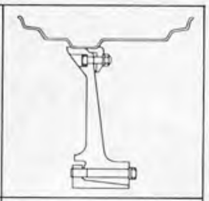
Adjust the other wheel in the same manner. Normally, both wheels are set the same distance from the tractor center line. After a few hours of service, RETIGHTEN the special bolts to required torque and keep them tight.

Changing Rim Position on Wheel

On rims that have a double rim ring, the clamps may be bolted to either side of the wheel and can engage either one of the two raised rings on the rim. This gives four possible rim positions on the wheel as shown.

On offset deep well rims, two possible rim positions are obtained by reversing the offset deep well. Install tire and rim on other wheel for proper direction of tire rotation.

To change the position of the rim on the wheel, jack up the tractor until there is little or no weight on

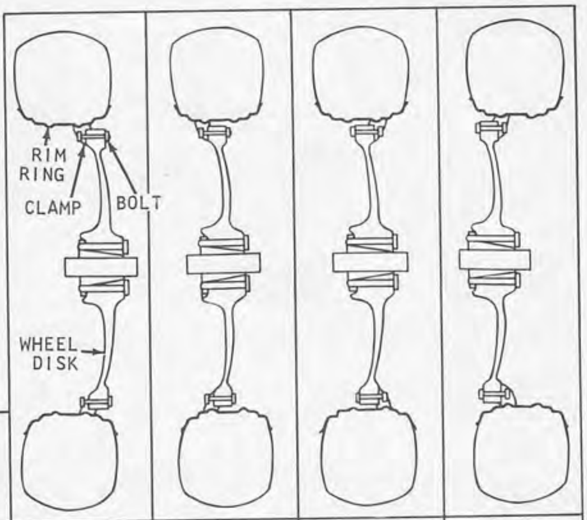
			
REGULAR AXLE	REGULAR WHEEL POSITION	66"-72½"	71½"-88½"
	WHEEL REVERSED	66"-78"	82½"-94"
LONG AXLE	REGULAR WHEEL POSITION	66"-79"	72"-95"
	WHEEL REVERSED	67½"-84"	83½"-100"
EXTRA LONG AXLE	REGULAR WHEEL POSITION	66"-87"	78½"-103"
R 14072	WHEEL REVERSED	73½"-92½"	89½"-108½"

Minimum tread on standard tractor is 70 inches.

Tread Chart for Tractors with Deep Well Rims the tire. Remove the rim clamps and shift the rim or wheel to the desired position. Install the clamps and tighten evenly. Be sure that the clamps on the wheel driving lugs engage the rim driving lugs as shown in the illustration.

Hammer each bolt head to seat the bolts. Retighten the clamps securely (170 ft-lbs torque). Adjust both rear wheels in the same manner.

After a few hours service, RETIGHTEN the clamps and keep them tight.



WHEEL TYPE	AXLE TYPE	OVERALL AXLE LENGTH	DISK POSITION				
REGULAR WHEEL	REGULAR AXLE	89-5/8"	-----	*60"-76"	68"-84"	67"-83"	75"-91"
	LONG AXLE	95-7/8"	-----	*60"-82"	68"-90"	67"-89"	75"-97"
	EXTRA LONG AXLE	103-7/8"	-----	67"-91"	75"-98"	73"-97"	81"-105"
	SPECIAL AXLE	113-1/8"	-----	67"-100"	75"-108"	73"-107"	81"-115"
OFFSET WHEEL	REGULAR AXLE	89-5/8"	DISH IN	60"-70"	62"-78"	61"-77"	69"-85"
			DISH OUT	71"-82"	79"-90"	78"-89"	86"-97"
	LONG AXLE	95-7/8"	DISH IN	60"-76"	62"-84"	61"-83"	69"-91"
			DISH OUT	70"-87"	78"-95"	77"-94"	85"-102"
	EXTRA LONG AXLE	103-7/8"	DISH IN	60"-84"	68"-92"	67"-91"	75"-99"
			DISH OUT	77"-95"	85"-103"	84"-102"	92"-110"
	SPECIAL AXLE	113-1/8"	DISH IN	60"-94"	68"-102"	67"-101"	75"-109"
			DISH OUT	77"-105"	85"-113"	84"-112"	92"-120"

*MINIMUM TREAD ON STANDARD TRACTOR IS 65.5 INCHES

R 16161

Tread Chart for Tractors with Regular Rims (Double Rim Ring)

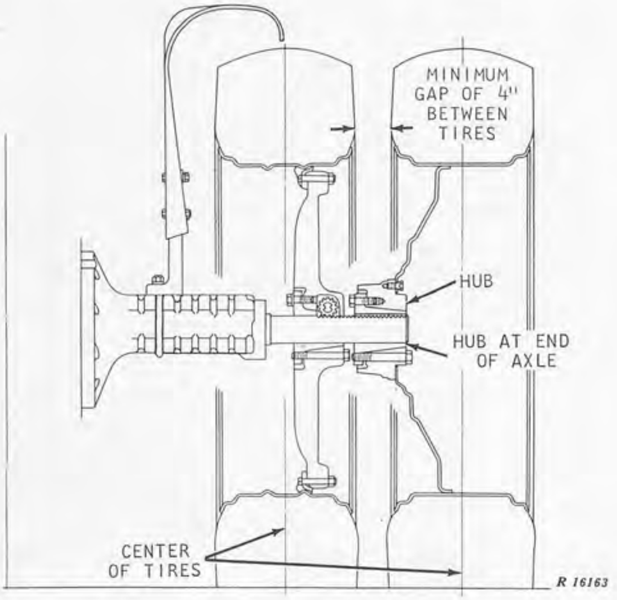
Reversing Wheel on the Axle

On tractors with offset wheels or wheels for deep well rims, the rear wheel tread may be changed by reversing the "dish" of the wheel. To do so, jack up the tractor, move the wheel outward, and remove the wheel and tire. Reverse the "dish" and install the wheel and tire on the other axle. BE SURE to maintain proper direction of tire rotation. After a few hours service, retighten the wheel and keep it tight.

⚠ **CAUTION: NEVER operate tractor with a loose wheel, rim, or hub.**

Double Rear Wheels

Use the tread chart above for double rear wheels with cast wheels. On double rear wheels with a steel disk rim, use the tread chart on page 16. The minimum gap between a 15.5-38 inner tire and a 13.6-38 outer tire on a regular axle is 4 inches. On all other



WHEEL TYPE	TIRE SIZE	AXLE TYPE	TREAD RANGE
CAST AND STEEL DISK	13.6-38 OR 15.5-38 INNER-13.6-38 OUTER	REGULAR	62"-99"
		LONG	62"-105"
		EXTRA LONG	67"-113"

R 16164

Tread for Double Rear Wheel with Steel Disk Rim

double wheels, the minimum gap should be 5 inches. Insufficient gap may damage the tires.

If the outer double rear wheel is removed when pulling heavy loads (in first, second, and third gears) that generate high weight transfer loads or draft loads, limit the rear wheel tread to 110 inches.

When outer wheel must be repositioned or removed, it is very important that the inner wheel rim clamp nuts and hub special bolts be securely tightened. The outer steel disk wheel retaining cap screws should be tightened to 80 ft-lbs torque.

TIRES

Properly inflated tires are important to the operation of your tractor. The amount of air pressure to be carried in the front and rear tires depends upon the implement used with the tractor and the amount of ballast employed.

Keep the tires inflated according to the recommendations shown in the charts. Under-inflated tires break and wear out rapidly. Over-inflated tires reduce traction and increase wheel slippage.

INFLATION CHARTS

Front Tires

Tire Size	Ply	Inflation Pressure: With Towed or Rear-Mounted Implement	Inflation Pressure: With Front-Mounted Implement
7.50-15	6	28 psi.	36 psi.
7.50-15	8	28 psi.	52 psi.
7.50-16	6	28 psi.	36 psi.
7.50-18	6	28 psi.	36 psi.
10.00-16	6	28 psi.	28 psi.
11.00-12	12	36 psi.	56 psi.
11L -15	6	28 psi.	28 psi.
11.00-16	6	28 psi.	36 psi.
11.2 -24	6	26 psi.	26 psi.
12.4 -24	6	22 psi.	22 psi.

Rear Tires

Tire Size	Ply	Inflation Pressure: With Little or No Added Ballast	Inflation Pressure: With Max. Ballast or Heavy Rear-Mounted Implement
13.6-38	*6	16 psi.	20 psi.
15.5-38	8	14 psi.	24 psi.
15.5-38	10	14 psi.	28 psi.
16.9-38	8	16 psi.	22 psi.
18.4-34	6	16 psi.	16 psi.
18.4-34	8	16 psi.	20 psi.
18.4-38	6	16 psi.	16 psi.
18.4-38	8	16 psi.	20 psi.
20.8-34	6	16 psi.	18 psi.
20.8-34	8	16 psi.	18 psi.
23.1-30	8	16 psi.	16 psi.

** Double tires only. Operating with this 6-ply tire as a single tire will usually overload the tire and may cause a hazardous tire failure.*

BALLAST

The safety and performance of your tractor will be improved by the correct amount of front and rear ballast.

Rear Ballast

The amount of rear ballast should permit operation with approximately 10 to 15 percent slip of the rear wheels. Field tests show that under normal field conditions maximum drawbar horsepower is available when operating in this range.

If too much rear ballast is used, the tread marks will be clear and distinct. Overballasting results in less power available to pull the implement because more power is required to overcome tractor rolling resistance. It will result in unnecessary soil compaction, and may overload the tires. With too little rear wheel ballast, the tread marks will be obliterated by excessive slippage which also results in horsepower loss and excessive tire wear.

A compromise in ballasting may be necessary when the tractor is used to pull loads having different draft requirements. If the tractor is used most of the time pulling high draft loads (such as plowing or chiseling), ballast the tractor for this operation. However, if a large amount of time is spent on light load work or in the higher gears, more consideration should be given to ballasting for the light operating condition and permitting the slip to increase for the small amount of time spent on high draft work.

The power weight-transfer hitch is available for operation with heavy draft loads or with a wide variation of draft loads on tractors having relatively light rear ballast.

Measuring Slippage

The following method may be used to measure rear wheel slip.

1. Mark a reference line on the side of the tire. Walk along side of the tractor while it is working and drop a marker where the chalk mark comes down to the ground.

2. Continue along side, count off 10 wheel revolutions, and again mark the spot where the chalk mark comes down to the ground.

3. With the implement out of the ground, drive the tractor between the marked spots, again marking the tire beside the marker on the ground. Count the wheel revolutions between the markers on the ground, estimating the last revolution as close as possible.

4. Determine the percent of slip from the revolutions obtained in Step 3.

Revolutions (from Step 3)	Percent of Slip	Revolutions (from Step 3)	Percent of Slip
10	0	8	20
9-1/2	5	7-1/2	25
9	10	7	30
8-1/2	15		

Add or remove ballast as required to obtain approximately 10 to 15 percent slip for the desired field operating condition.

Maximum Ballast

Maximum ballast used should be limited to the tire carrying capacity or the tractor operating capacity. Avoid ballasting to pull heavy loads in the lower gears (1st, 2nd, or 3rd) over long periods of time. Tractor and tire life can be extended if the draft load for continuous operation does not exceed 4th gear capacity of the tractor. Be sure to remove the additional ballast when it is no longer needed.

The following charts list the maximum tire carrying capacity (at 20 miles per hour). These capacities should not be exceeded.

FRONT TIRE CARRYING CAPACITY

Tire Size	Ply	Weight	Tire Size	Ply	Weight
7.50-15	6	1985 lbs.	11.00-12	12	4040 lbs.
7.50-15	8	2460 lbs.	11L -15	6	2551 lbs.
7.50-16	6	2100 lbs.	11.00-16	6	3935 lbs.
7.50-18	6	2300 lbs.	11.2 -24	6	2310 lbs.
10.00-16	6	2870 lbs.	12.4 -24	6	2520 lbs.

REAR TIRE CARRYING CAPACITY

Tire Size	Ply	Weight	Tire Size	Ply	Weight
13.6-38	6	3470 lbs.	18.4-34	8	5650 lbs.
15.5-38	8	4330 lbs.	18.4-38	6	5230 lbs.
15.5-38	10	4730 lbs.	18.4-38	8	5970 lbs.
16.9-38	8	5310 lbs.	20.8-34	6	5560 lbs.
18.4-34	6	4940 lbs.	20.8-34	8	6300 lbs.
			23.1-30	8	7040 lbs.

Cast-Iron Weights

When additional weight is required, cast-iron weights may be bolted to the inside or outside of the rear wheels.

Your John Deere dealer has 120 and 140-pound weights available. The 140-pound weights are used on wheels with 34- or 38-inch rims or as additional weights on 30-inch rims when no interference exists between the weight and the rim.

To install weights with the weight hand holds in the horizontal position, the weight reference mark on the wheel should be up (see illustration on page 14). To obtain wrench clearance for adjusting wheel tread, install weights with the reference mark on the rim of the weight next to the weight reference mark on the wheel.

When plowing, best results are generally obtained by placing more weight on the land wheel than on the furrow wheel.

Liquid Weight

Water and calcium chloride solution is an economical means of adding weight to the front and rear wheels. This solution, added in the tire inner tubes, will not damage the inner tube or tire if used in the proper proportions. The addition of calcium chloride is recommended to prevent the water from freezing.

Use of this method of weighting the wheels has the full approval of the tire companies. See your John Deere dealer for this service. The following chart lists the liquid weight each tire will hold when 75 percent full (filled to valve level).

LIQUID WEIGHT PER TIRE (75 PERCENT FILLED)			
Tire Size	**Slush-Free at 13°F.; Solid at -23°F. (Approx. 2 Lbs. $CaCl_2$ per Gal. Water)**	**Slush-Free at −12°F.; Solid at −52°F. (Approx. 3.5 Lbs. $CaCl_2$ per Gal. Water)**	**Slush-Free at −53°F.; Solid at −62°F. (Approx. 5 Lbs. $CaCl_2$ per Gal. Water)**
11.2-24	216 lbs.	228 lbs.	253 lbs.
12.4-24	280 lbs.	305 lbs.	334 lbs.
13.6-38	480 lbs.	520 lbs.	550 lbs.
15.5-38	611 lbs.	646 lbs.	677 lbs.
16.9-38	848 lbs.	912 lbs.	974 lbs.
18.4-34	874 lbs.	936 lbs.	988 lbs.
18.4-38	1034 lbs.	1113 lbs.	1174 lbs.
20.8-34	1062 lbs.	1132 lbs.	1480 lbs.
23.1-30	1355 lbs.	1457 lbs.	1547 lbs.

Front Ballast

Front ballast may be required for stability and steering control when weight on the front wheels is transferred to the rear wheels by implement action through the hitch or power weight-transfer coupler. The approximate total front tractor weight for normal field conditions is:

1. Approximately 1/3 of total tractor weight for operation of integral implements, semi-integral implements, or towed implements hitched to the power weight transfer coupler.

2. Approximately 1/4 of the total tractor weight for operation of towed implements hitched to the tractor drawbar.

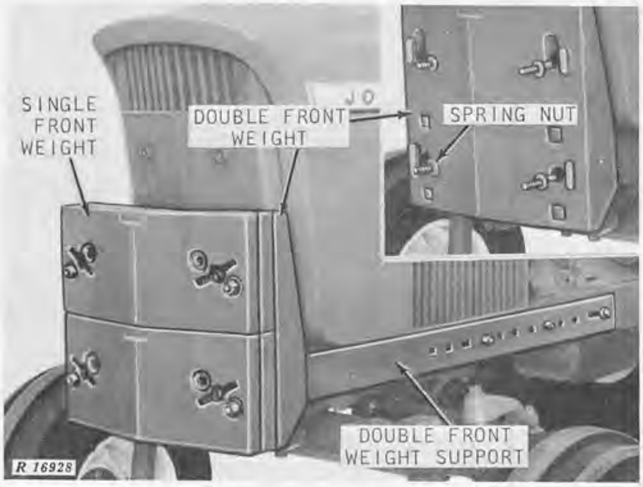
Add any additional ballast necessary for stability and safety. Front end ballast may not always maintain the required stability if the tractor is driven too fast over rough ground with heavy rear-mounted tools in the raised position. Drive slowly under these conditions.

Single Front Weights

Two side weights and up to eight single front weights may be added. Each of the weights weighs 85 pounds.

Install the side weights first. Stack the single front weights on the front portions of the two side weights. Rotate each weight 180 degrees with respect to the preceding weight to line up the mounting holes.

Double Front Weights



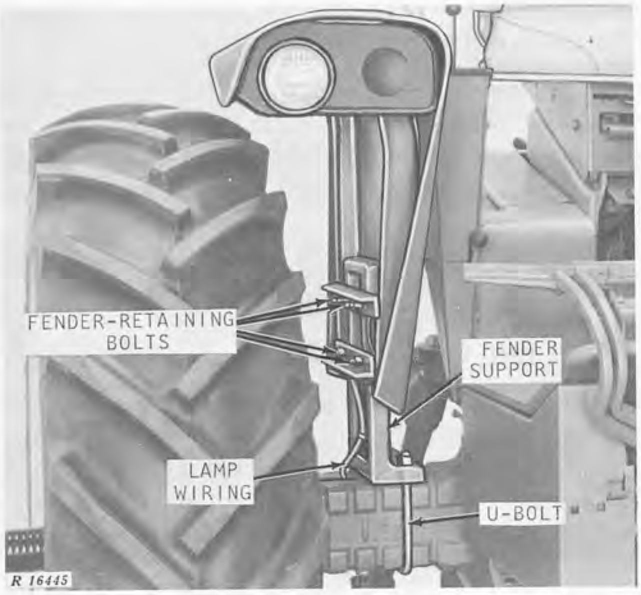
Double Front Weights

One 220-pound double front weight and up to two rows of seven single front weights may be added.

Install the double front weight supports first. Tighten the front support-attaching bolts to 300 ft-lbs torque. Install the double front weight. Use the long single weight attaching bolt to mount the first single weight in each row. Install the spring nut on this bolt to prevent it from slipping out of position when mounting the first single weight.

FENDERS

The fender shown below may be moved in or out on the rear axle housing, and may also be moved up or down.



Row-Crop Tractor Fender

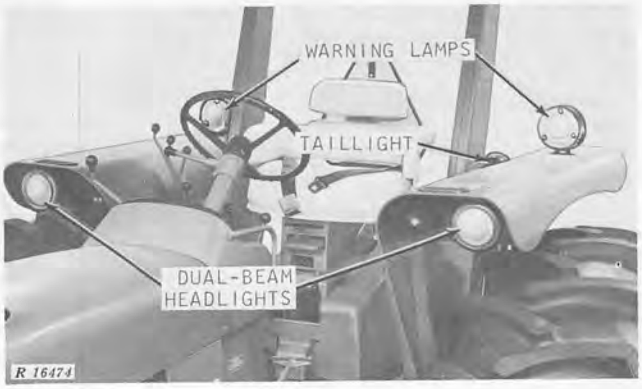
To move the fenders in or out along the axle housing, remove the U-bolts. Move each fender and U-bolt to the new position, install the U-bolt, and tighten the retaining nuts securely.

To adjust the height, remove the fender-retaining bolts. Then slide the fender up or down on the support. When the fender is in the desired position, install and tighten the four fender-retaining bolts.

IMPORTANT: Do not damage lamp wiring when moving fenders. Adjust the lights after moving fenders.

LIGHTS

The lights on your tractor are designed to give the maximum amount of safety and convenience when operating at night or during other periods of low visibility.



Tractor Lights

Headlights

The tractor has sealed, dual-beam headlights. A foot-operated dimmer switch is used to switch between high and low beams. A hi-beam indicator light on the instrument panel glows when the lights are on high beam.

Front flood lamps are available from your John Deere dealer.

Taillight

The combination red-white taillight is mounted at the rear of the left-hand fender. The light illuminates implements at the rear of the tractor or glows red for night highway travel.

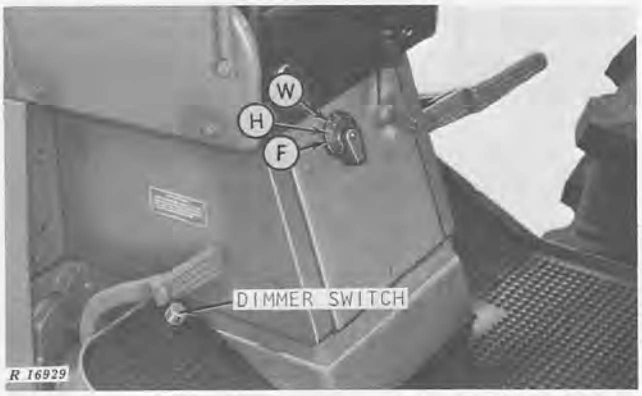
Rear Flood Lamp

A rear flood lamp on the right-hand fender of a standard tractor also illuminates implements at the rear of the tractor.

Flashing Warning Lamps

The tractor has a combination flashing warning lamp and a reflector on each fender. The warning lamps glow amber to the front and rear. When a flashing light is prohibited by local regulations, the lamp should be wired to burn continuously when the light switch is in the "W" or "H" position. See page 58.

Light Switch



Light Switch

The tractor light switch has four positions:

OFF - To turn off all lights.
W - To turn on the warning lamps.
H - To turn on the dual-beam headlights, warning lamps, and red tail lights.
F - To turn on the dual-beam headlights and the rear flood lamps.

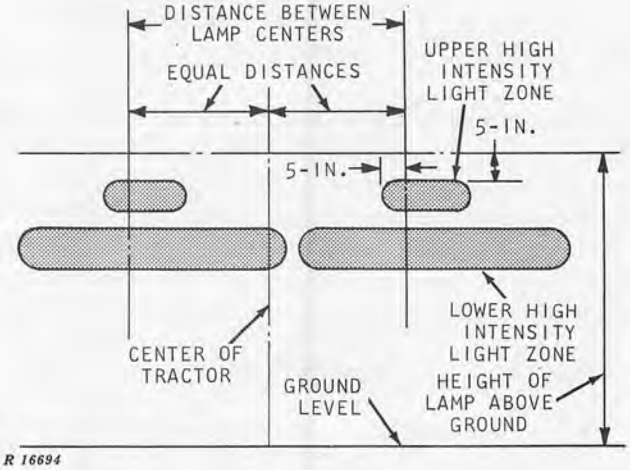
If front flood lamps are installed, they will be on when the high-beam lights are on.

Adjusting the Headlights

CAUTION: Your tractor headlights should be checked periodically for proper adjustment. They should always be checked if the position of the fenders has been changed.

To adjust the lights, position the tractor on level ground so the lights are 25 feet from the wall of a building with the tractor's centerline perpendicular to the wall. Use the steering column and hood ornament to find the tractor centerline.

Check the adjustment of the dual-beam headlights. Turn the light switch to the "F" position. Depress the dimmer switch until the lights are on low beam (hi-beam indicator light should also be out). There will be an upper and a lower high intensity zone on the wall as shown by the illustration. The top edge of the upper high intensity light zone should be 5 inches lower than the height of the lamp above the ground. The left edge of the upper zone should be 5 inches to the left of the lamp's vertical centerline. If adjustment is necessary, loosen the nut at the rear of the lamp. When the lamp is adjusted correctly, tighten the nut securely while holding the light in this position.


DISTANCE BETWEEN LAMP CENTERS
EQUAL DISTANCES
UPPER HIGH INTENSITY LIGHT ZONE
5-IN.
5-IN.
LOWER HIGH INTENSITY LIGHT ZONE
CENTER OF TRACTOR
GROUND LEVEL
HEIGHT OF LAMP ABOVE GROUND
R 16694

Tractor Headlight Adjustment

Implement Warning Lamp

This lamp, which glows amber to the front and to the rear, mounts securely on the left-hand side of the implement. The lamp, which is equipped with a flasher, is available from your John Deere dealer.

The lamp is connected to the electrical outlet socket and is lighted as long as it is connected.

Electrical Outlet Socket

This socket, a source of 12-volt d.c. electrical power, is used for plugging in the implement warning lamp, auxiliary lights, or other electrical equipment. The outlet socket, available from your John Deere dealer, is located at the left rear of the tractor.

HIGHWAY DRIVING

When transporting (or driving) the tractor on a road or highway at night or during the day, use accessory lights and devices for adequate warning to the operators of other vehicles. In this regard, check local governmental regulations. Various safety lights and devices are available from your John Deere dealer.

When driving on the highway, be sure the lights are adjusted so they will not blind the operator of an oncoming vehicle. The flood lamps should not be adjusted to shine on the cab windshield causing glare to the operator.

Always dim the tractor headlights when meeting a vehicle at night by depressing the foot-operated dimmer switch (hi-beam indicator lamp should be out).

IMPLEMENT HITCH AND CONTROL SYSTEM

The implement hitch and control system on your tractor provides a quick and easy means for attaching and lifting various implements and for controlling their operation.

The system may include a hydraulically operated rear rockshaft, a Power Weight-Transfer or a Universal 3-Point Hitch (tractor must have a rockshaft), one, two, or three remote hydraulic cylinders, a drawbar, or a power take-off.

ROCKSHAFT

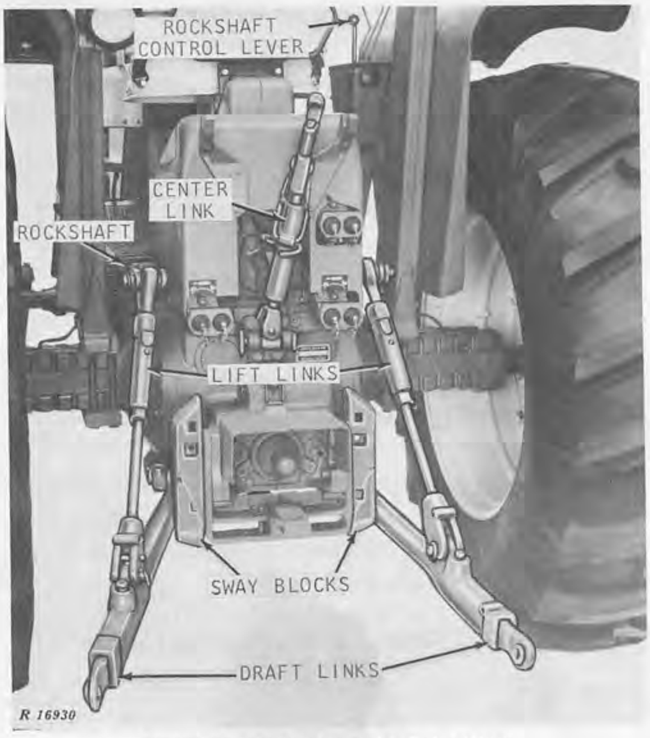
The rear rockshaft can be used to raise, lower, and control a wide variety of integral implements and 3-point hitch tools.

The rockshaft is controlled by the rockshaft control lever and the rockshaft selector lever. The rockshaft may be operated whenever the tractor engine is running.

The selector lever position (page 22) determines which implement control system ("Load," "Depth," or "Load-and-Depth") is used.

In "Depth" control, the implement attached to the 3-point hitch will work at the depth selected by the rockshaft control lever, regardless of the amount of pull required.

In "Load" control, the rockshaft automatically raises or lowers the hitch and implements to maintain a constant load through variations in soil density or ground contour.

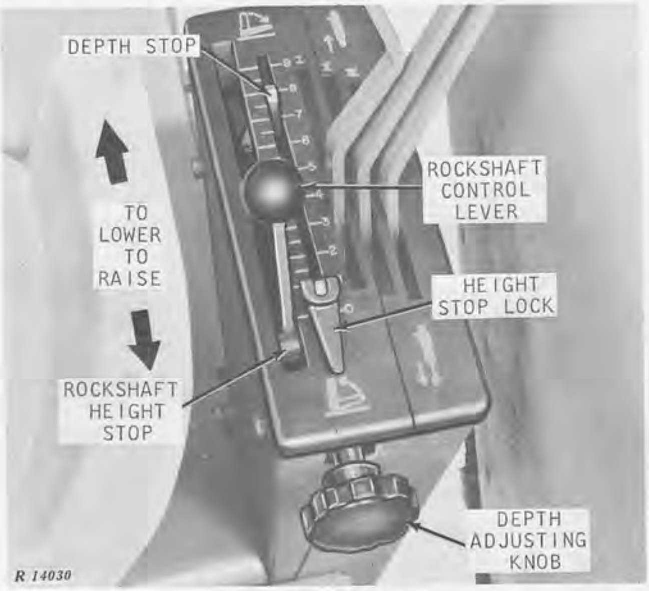


Rockshaft and Universal 3-Point Hitch

In "Load-and-Depth" control, the rockshaft maintains a more uniform implement working depth when variations in soil density are encountered. The "Load-and-Depth" control also boosts traction with only a slight change in working depth. When the load increases, the system lifts up slightly on the hitch and transfers more of the implement weight to the tractor.

Load sensing for the system is accomplished through the 3-point hitch draft links.

Using Rockshaft Control Lever



Rockshaft Control Lever

The rockshaft control lever is located in the hydraulic control console at the right of the seat. Push the rockshaft control lever forward to lower the implement or pull it rearward to raise the implement.

After a few minutes of operation to determine the desired position of the rockshaft, set the adjustable depth stop to limit the forward movement of the rockshaft control lever. Then each time the control lever is moved to the stop the implement will return to the same depth. Turn the depth-adjusting knob to move the stop to a new position.

The implement may be lowered further without shifting the depth stop by moving the control lever to the left-hand side of the slot and pushing the lever further forward.

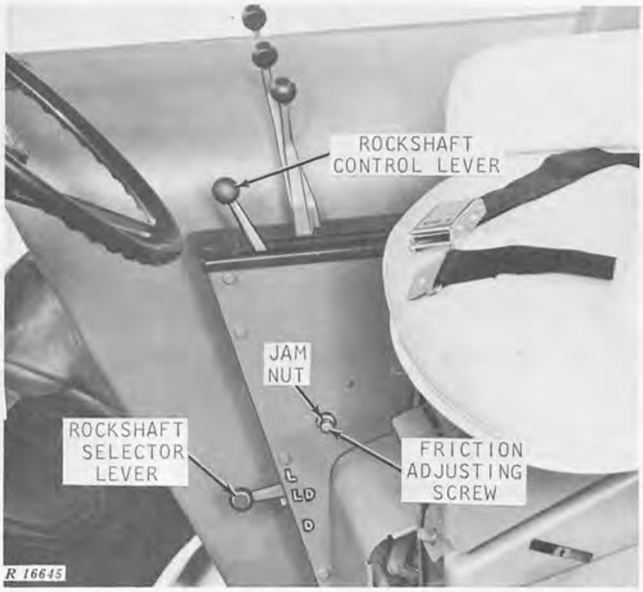
The scale beside the rockshaft control lever serves as a guide when setting the lever.

To obtain floating action for rockshaft-controlled implements with gauge wheels, place rockshaft selector lever, located near the bottom of the console, in the "D" position and push the control lever all the way forward in the quadrant.

The rockshaft height stop, available from your dealer, may be used to limit rockshaft lift. Place the rockshaft selector lever in the "D" position. Raise the stop lock and slide the stop forward to the new position. If the stop slips when it is locked, tighten it by raising the lock and turning it 1/2 turn clockwise. With the selector lever in the "LD" position, the height stop may limit rockshaft lift within an acceptable range for some implements.

To tighten the friction holding force on the rockshaft control lever, loosen the jam nut and turn the friction adjusting screw out until an 8-pound force on the knob is required to move the lever. Tighten the jam nut.

Setting Rockshaft Selector Lever



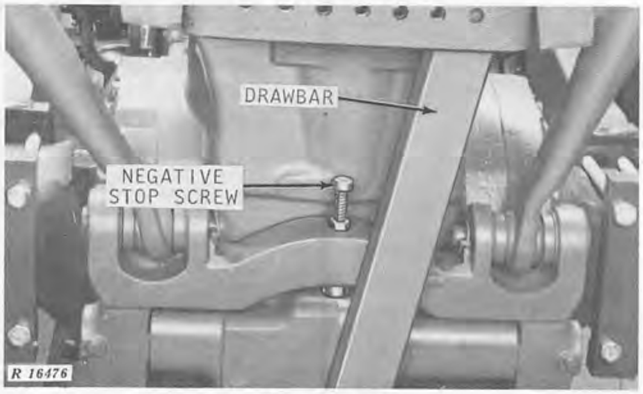
Selector Lever

The rockshaft selector lever located at the lower front edge of the console is used to sélect the desired implement control system (see page 21). The upper "L" position is used for "LOAD" control. The middle "LD" position is used for "LOAD AND DEPTH" control. The lower "D" position is for "DEPTH" control.

Place the lever in the "D" position before attaching an implement to the hitch.

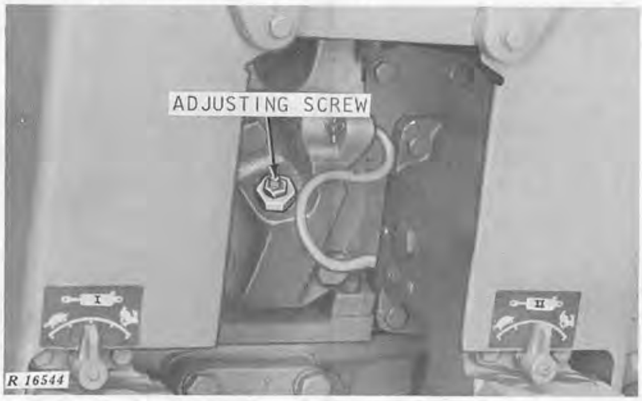
Adjusting Negative Stop Screw

If the rockshaft fails to raise completely when the selector lever is in the "L" position, check the negative stop screw adjustment. To do so, lower the rockshaft, move the drawbar sideways, loosen the lock nut, and turn the stop screw against the transmission case. Then back out the screw 1/8-turn and tighten the lock nut.



Negative Stop Screw

Adjusting Speed-of-Drop



Rockshaft Speed-of-Drop Adjustment

The speed at which the rockshaft and implement will drop is controlled by the valve on the rockshaft piston cover. Loosen the lock nut on the valve and turn the valve in to decrease or out to increase the speed of drop. Tighten the lock nut when the speed of drop is correct.

Front Implement Arms

⚠ **CAUTION: Install implement arm guards on roll-gard when front implement arms are installed on rockshaft.**

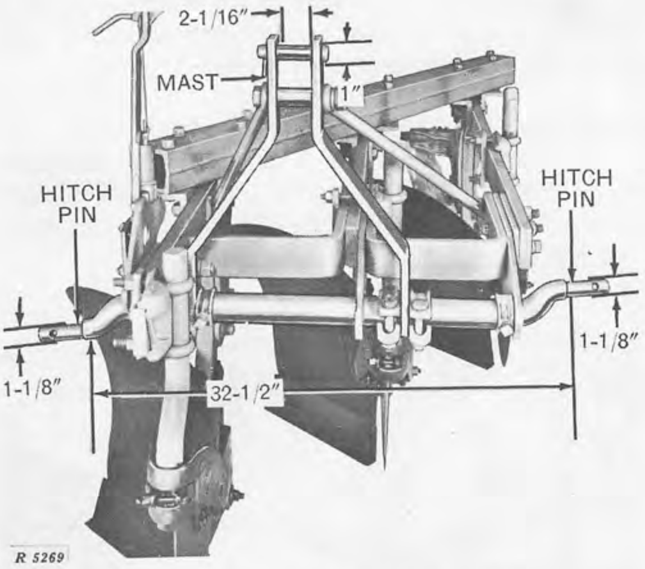
The lower cover on the hydraulic control console must be removed before the lift rods from a front mounted implement can be connected to the implement arms on the rockshaft.

UNIVERSAL 3-POINT HITCH

The 3-point hitch consists of a center link, draft links, and lift links. The rockshaft operates the 3-point hitch.

Preparing Hitch for Category 1 or 2 Implement

Two classes of implements, referred to as category 1 and category 2, may be attached to a tractor with a 3-point hitch. Implements are grouped in these categories according to the dimensions of their hitch attaching points.



Category 2 Implement Hitch Dimensions

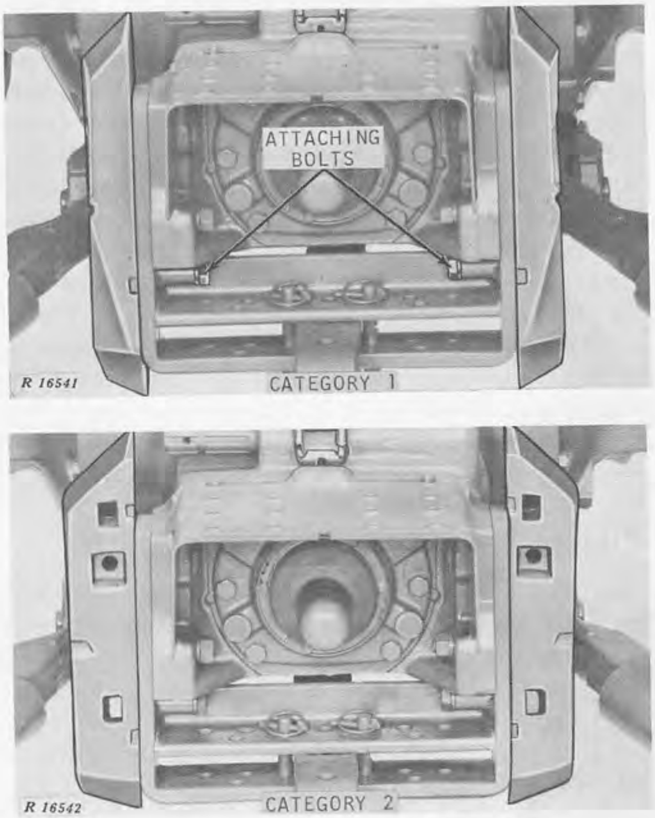
Distinguishing Dimensions	Category 1 Implement	Category 2 Implement
Diameter of hitch pins	7/8"	1-1/8"
Distance between shoulders of hitch pin	26-7/8"	32-1/2"
Gap in top of mast	1-3/4"	2-1/16"
Diameter of holes in top of mast	3/4"	1"

The 3-point hitch on your tractor is normally equipped to attach directly to a category 2 implement.

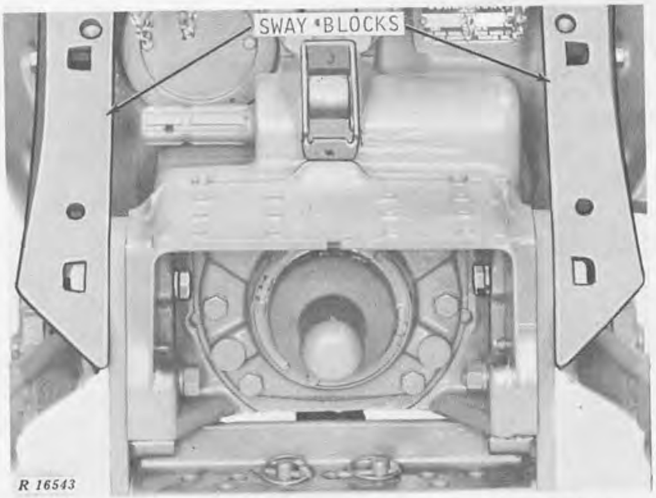
Before attaching a category 1 implement to the 3-point hitch, install bushings in the draft link attaching holes to accommodate the smaller 7/8-inch diameter hitch pins. See your John Deere dealer for these adapting parts.

Positioning Sway Blocks

Sway blocks control 3-point hitch and implement side motion. The words "LEFT" and "RIGHT" on the two blocks indicate the proper side of the tractor drawbar support to which each is attached.



Sway Blocks Installed to Eliminate Side Sway



Sway Blocks in Upper Position to Permit Side Sway When Implement Is Working (Category 2 Implement)

Before attaching an implement to the 3-point hitch, make sure the sway blocks are installed properly. Refer to the implement operator's manual for proper sway block location.

If a category 1 implement is to be attached, each sway block is installed with the wide flat surface facing the drawbar support.

If a category 2 implement is to be attached, each sway block is installed with the narrow flat edge facing the drawbar support.

The sway blocks can be installed in two positions for each implement category. When they are installed downward, along the sides of the drawbar support, they will eliminate implement side sway, whether the implement is in working position or in transport position. For some implements it will be necessary to install sway block shims, available from your dealer, between the sway blocks and the tractor drawbar support. Use the shims when the sway blocks are in the down position only.

When the sway blocks are pivoted upward as shown in the illustration on page 23, they permit the implement to sway when it is lowered for work. The sway blocks will eliminate side sway when the implement is raised for transport.

Attaching Implement to 3-Point Hitch

(1) Set the drawbar in the short, high position. See page 32. If necessary, lock it at the extreme left-hand side of the support.

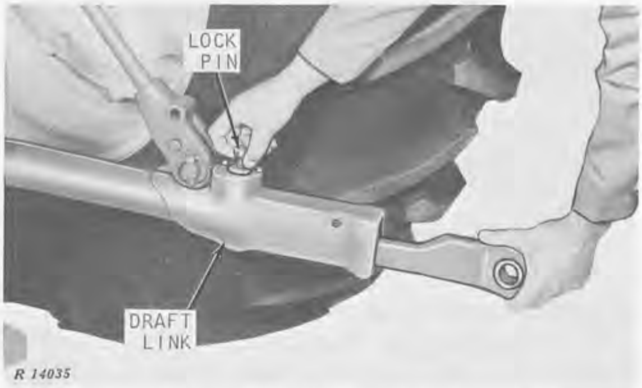
(2) The master shield may have to be removed to attach a short-coupled implement. See page 33.

(3) If the implement requires a different left-hand lift link adjustment, measure and adjust the lift link before connecting the implement.

(4) MAKE SURE THE SELECTOR LEVER IS IN THE "D"(LOWER) POSITION.

(5) Back up the tractor until the draft links of the 3-point hitch are approximately in line with the implement hitch pins. Place the speed selector or the shift lever in the "PARK" position. Raise or lower the draft links by means of the rockshaft control lever, if necessary.

Attaching Draft Links



Extending Draft Link Rearward

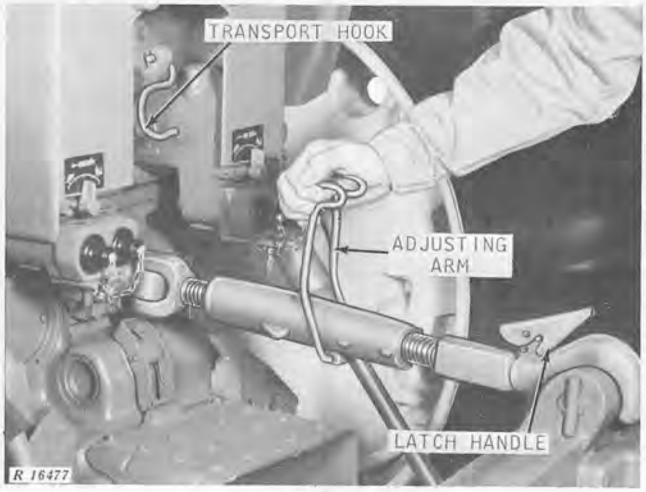
(6) Pull up on the lock pins on the draft links and extend the telescoping draft links rearward.

(7) Raise the draft link ends by hand and slip the swivel ball sockets over the hitch pins. Lock them in place with the "Quik-Lock" pins provided. When not in use, store each "Quik-Lock" pin in the large hole in the pins which fasten the lift links to the draft links.

(8) Lock the telescoping draft links in operating position by backing up the tractor and raising and lowering the hitch. Be sure that the lock pins snap into place. For satisfactory hitch operation, the draft links must not bind on the sway blocks.

Attaching Center Link

(9) Remove the center link from the transport hook. Lift up on the center link latch handle and place the center link hook on the implement mast ball. Lock the hook to the mast ball by releasing the latch handle.

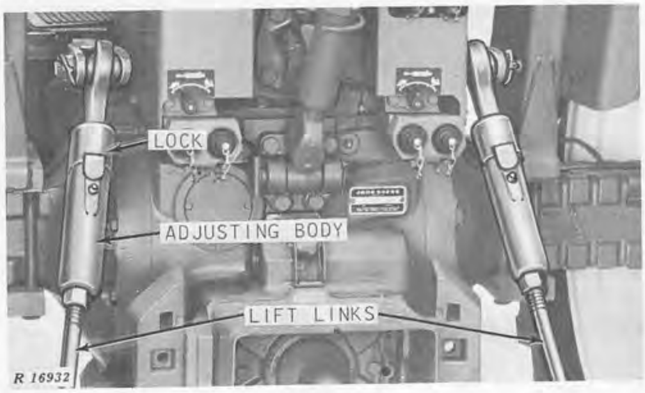


Adjusting Center Link

If it is necessary to adjust the length of the center link, pull up the adjusting arm and with the arm at right angle to the body, rotate the body to lengthen or shorten the center link. Normal length is 26-3/8 inches (range of adjustment is 23 to 29-3/4 inches). Center link length for tractors with 18.4-38 or 20.8-34 tires is 2-5/8 inches longer. After center link is at proper length, push the arm down to lock it in place.

(10) Raise the implement slowly and check for any point of interference. Make adjustments if necessary. Set the height stop when required to prevent damage to mounted PTO-driven machine linkage.

(11) Move the rockshaft selector lever to "L" or "LD" position if required by the implement.



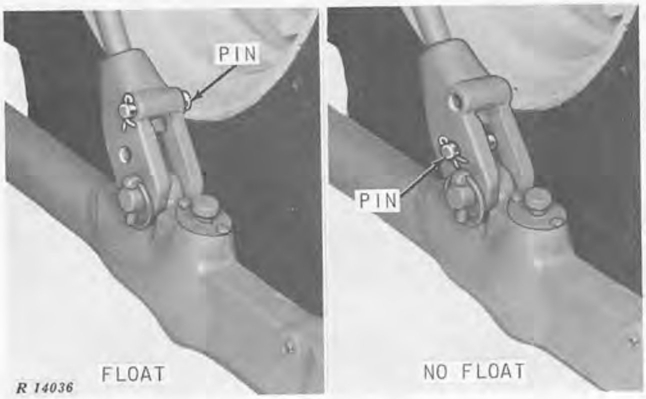
Lift Links

Adjusting Lift Links

The normal lift link length from center of pin to center of pin is 29-1/2 inches (32 inches if equipped with 18.4-38 or 20.8-34 tires). The lift links may be adjusted 1-1/4 inches shorter or longer. Do not adjust more than 1-1/4 inches longer.

To adjust the lift link, raise the lock and turn the adjusting body. If desired, a wrench may be used at the hexagon surface at the lower end of the body. After adjusting, slide the lock down until its slots engage the body and prevent the body from turning.

Adjusting for Lateral Float



Implement Float Adjustment

Provision is made to allow for lateral float of implements equipped with gauge wheels permitting one side of the implement to follow the ground contours without affecting the other side.

To allow the implement to float, install the pins in the upper holes in the lower lift-link-to-draft-link yokes. To prevent float, install the pins in the lower holes in the yokes.

Leveling the Implement

To level the implement LATERALLY (from side to side), it may be necessary to adjust the length of a lift link. After making the adjustment, make sure the lock is down in place.

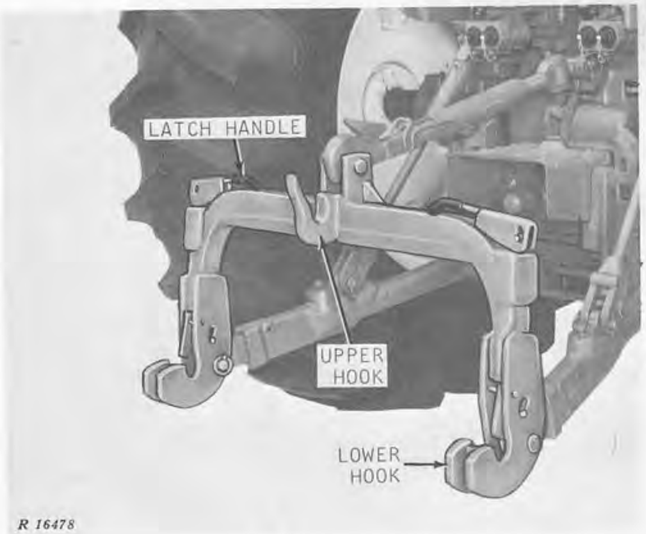
To level the implement FORE-AND-AFT, it may be necessary to adjust the length of the center link by means of the adjusting arm. After the implement is leveled, lock the adjusting arm in place. See the implement operator's manual for the recommended adjustments.

Quik-Coupler

The Quik-Coupler provides a fast easy means for attaching an integral category 2 implement to the universal 3-point hitch without getting off the tractor. The Quik-Coupler and adapters are available from your John Deere dealer.

Installing Quik-Coupler on 3-Point Hitch

With an implement mast ball installed on the Quik-Coupler, install the coupler on the 3-point hitch draft links and center link as shown. Tighten the pin retaining screws on a cast Quik-Coupler securely.



Quik Coupler

Attaching Implement to Quik-Coupler

Install the two adapters which are used with the Quik-Coupler on the ends of the implement hitch pins, with the large parts outward. Secure the adapters in place with the spring pins provided.

Lift the latches to the vertical position to lock them in the released position. Lower the hitch assembly until the attaching hooks are lower than the implement hitch pins.

Back the tractor up until the implement hitch pins enter the lower hooks and the upper hook is behind the pin between the sides of the implement mast. Slowly raise the rockshaft to engage the implement. Push inward on the handles so that the latch handles are horizontal against the coupler frame to lock the implement to the coupler.

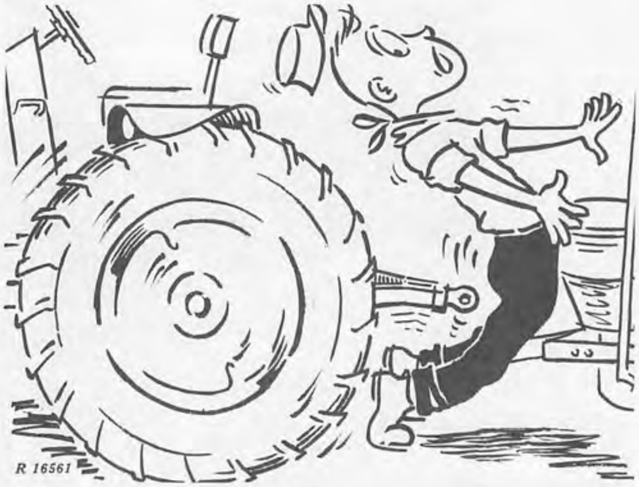
⚠ **CAUTION: When the latches are properly locked, the latch handles will be horizontal and against the coupler frame.**

IMPORTANT: Do not attach a drawbar towed load to the 3-point hitch and Quik-Coupler. Such implements should be hitched to the Power Weight-Transfer Hitch drawbar or the tractor drawbar only.

Removing Implement from Quik-Coupler

To remove most implements, raise the rockshaft far enough to reach the latches. Raise the handles to the vertical position to lock them in the released position. Lower the implement to the ground.

Continue lowering hitch and coupler until the coupler hooks clear the implement mast and hitch pin adapters. Drive the tractor forward away from the implement.

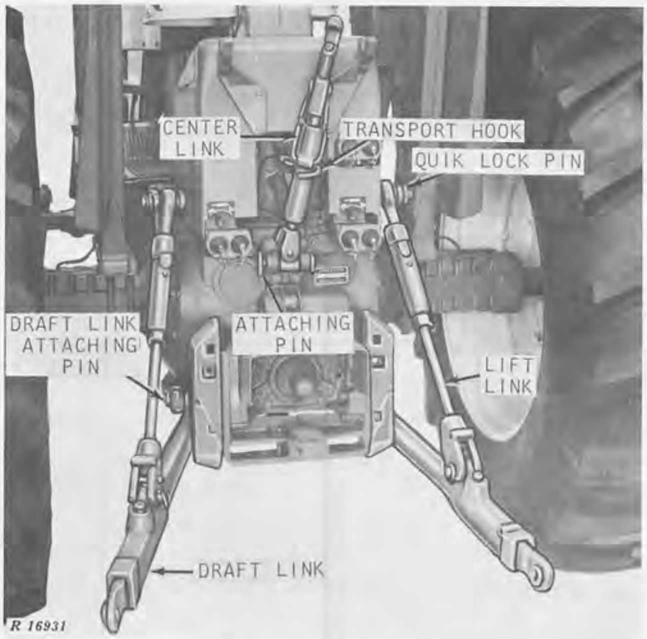


⚠ **CAUTION: Do not stand between the tractor and implement unless the shift lever is in "PARK" position to hold the tractor stationary.**

Removing the Universal 3-Point Hitch

The Universal 3-Point Hitch can be removed, when necessary, as follows:

Detach the front end of each draft link from the tractor by removing the "Quik-Lock" pins and pulling out the draft link attaching pins.



3-Point Hitch Removal

Detach the top end of each lift link from the rockshaft arms by removing the "Quik-Lock" pins and lift link attaching pins from the rockshaft lift arms. Remove the draft links with lift links.

Detach the center link from the tractor by removing the "Quik-Lock" pin and pulling out the center link attaching pin. Then pull the center link out of the transport hook to remove the center link from the tractor.

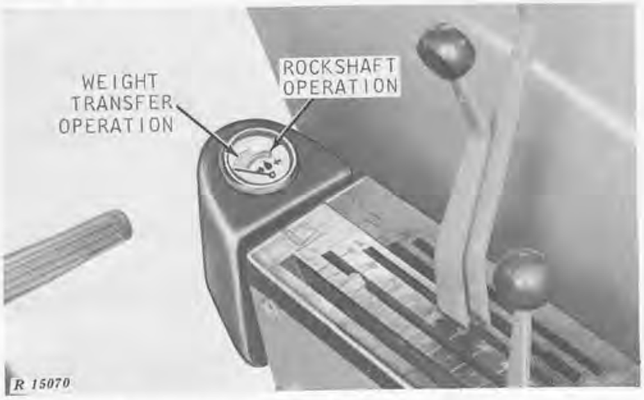
THE WORLD'S BEST
***Safety* DEVICE**
IS A
***Careful* OPERATOR**
X 1284

POWER WEIGHT-TRANSFER HITCH

The Power Weight-Transfer Hitch transfers weight from a drawn implement and the tractor front end to the tractor rear wheels as it is needed to provide traction. When operation varies between light and heavy loads, the Power Weight-Transfer Hitch eliminates using heavily weighted rear wheels for light-load operations.

For most draft conditions, no added rear wheel ballast is required. Since front weight is transferred to the rear wheels, eight single front weights, or more if a double front weight is installed, should be added to the tractor front end.

Power Weight-Transfer Pressure Gauge



Power Weight-Transfer Pressure Gauge

The Power Weight-Transfer Pressure Gauge indicates that weight is being transferred and is mounted at the front edge of the hydraulic console.

During normal operation, pull the rockshaft control lever rearward until the gauge hand moves clockwise in the green band for weight transfer operation. Weight transfer increases as the hand moves upward.

Operating with the gauge hand beyond the Weight-Transfer band usually results in an unstable operation with little added effective weight transfer.

The gauge will also show hydraulic oil pressure at the rockshaft to monitor hitch operation when using 3-point hitch implements with the rockshaft selector lever in the "L" or "LD" position. No pressure fluctuations indicate that the rockshaft control lever is set deeper than the implement is working. Move the lever slightly rearward to obtain some hydraulic pressure.

If satisfactory working depth is difficult to maintain, see your implement operator's manual.

Installing Power Weight-Transfer Hitch Coupler

Remove the PTO master shield and the 3-point hitch center link. Adjust lift link length to 29-7/8 inches (32 inches if equipped with 18.4-38 or 20.8-34 tires). Move the drawbar to the shortest position.

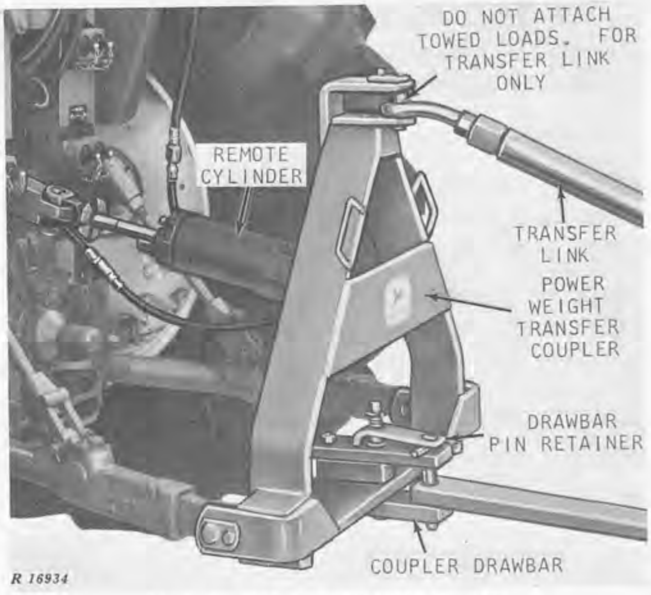
CAUTION: PTO guard must be in place over the PTO shaft.

Install sway blocks downward in the category 2 position. This position prevents coupler side motion and gives implement stability when towing implements on the highway.

If some coupler drawbar side motion is desired, pivot the sway blocks upward only during field operation.

Connect the piston rod end of a 3 x 8-inch hydraulic stop remote cylinder with attaching pivot to the center link attaching bracket.

Remove the dust protectors and wipe clean the remote cylinder hose ends and hose receptacles. Push the oil return receptacle sleeve forward and connect the hose from the stop rod side of the cylinder to the receptacle. Release the sleeve to lock the hose to the coupler. Connect the other hose (which supplies oil to the rod end cylinder) to the pressure receptacle on the Power Weight-Transfer Hitch control valve.


DO NOT ATTACH TOWED LOADS. FOR TRANSFER LINK ONLY
REMOTE CYLINDER
TRANSFER LINK
POWER WEIGHT TRANSFER COUPLER
DRAWBAR PIN RETAINER
COUPLER DRAWBAR
R 16934

Power Weight-Transfer Hitch Coupler

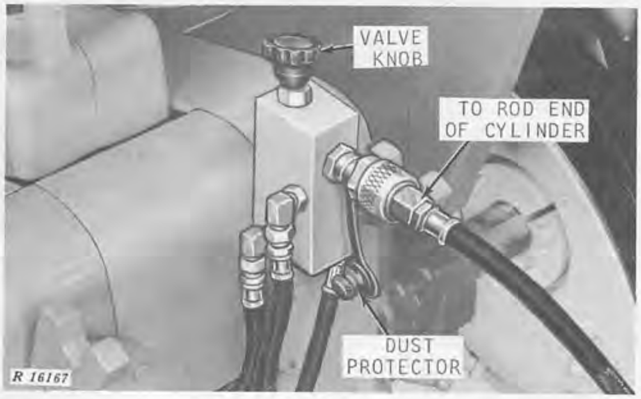
Attach Power Weight-Transfer coupler to the draft links using the spacer washers at the outside edge of the draft link balls between the draft link balls and the coupler.

Connect remote cylinder to the coupler.

Attaching Implement to Coupler

If not already equipped, install a Weight-Transfer link attaching bracket to a structural member of the implement. Position the bracket as near as possible in the line of draft between the top of the coupler and the center of implement ground engagement. See your implement operator's manual.

Place rockshaft selector lever in "D" position.



Control Valve

Turn the Power Weight Transfer Hitch control valve knob all the way counterclockwise to the rockshaft position.

Raise the coupler with the rockshaft control lever until the coupler drawbar is as high as the regular tractor drawbar (draft links should be nearly level).

Connect the implement hitch to the drawbar.

CAUTION: Always place the drawbar pin retainer over the drawbar pin to prevent accidental implement disconnection during operation.

Connect the adjustable end of the weight-transfer link to the top pin of the coupler and the sliding end to the implement. ONLY the weight-transfer link should be attached to the top coupler pin. Tighten securely the attaching pin retaining screws for the coupler draft link and the weight-transfer link.

Turn the control valve operating knob all the way clockwise to the Weight Transfer position. Move the rockshaft selector lever to the "L" position.

With the implement at working depth, loosen the upper eyebolt lock nut and adjust the Weight-Transfer link until the coupler frame is nearly vertical. The remote cylinder will be at mid-stroke to allow movement when passing over hills and swales. The link is adjustable between 47 and 62 inches. Do not adjust link beyond 62 inches. A separate link for each implement will eliminate link readjustment when changing implements.

Removing Power Weight-Transfer Hitch Coupler

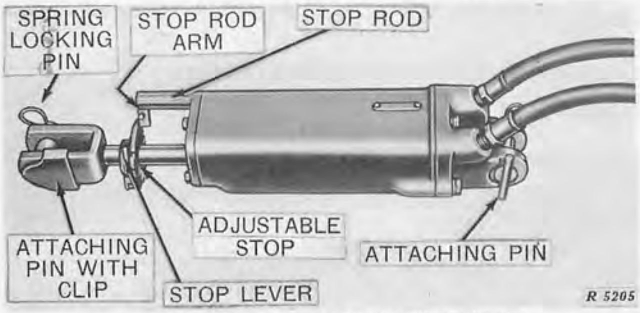
Disconnect the remote cylinder hoses and install the protective dust plugs and caps.

Move the rockshaft control lever all the way forward. Turn the Power Weight-Transfer control valve operating knob counterclockwise to the rockshaft position.

Remove the coupler and the remote cylinder.

Install the PTO master shield and the 3-point hitch center link.

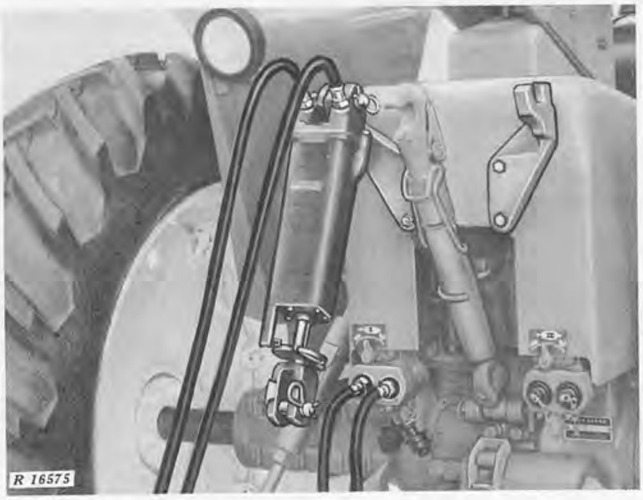
REMOTE HYDRAULIC CYLINDERS



Hydraulic Stop Remote Hydraulic Cylinder

Your tractor may be equipped to operate 1, 2, or 3 single-acting or double-acting remote hydraulic cylinders. The cylinders are connected by hoses to the breakaway couplers at the rear of the tractor and are operated by oil from the main hydraulic pump. Pressure oil from the pump is directed to the breakaway couplers by the selective control valves located above the couplers. The remote cylinders may be operated individually or simultaneously.

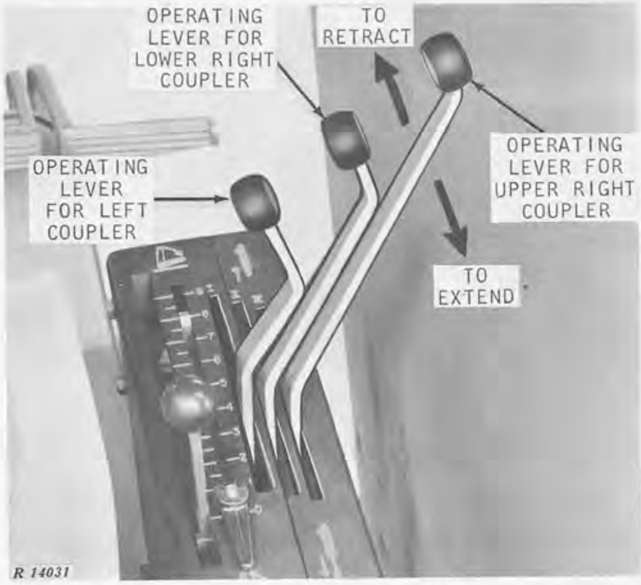
When not in use, one or two remote cylinders can be stored on the transport arms at the rear of the tractor.



Remote Cylinder on Transport Arm

Using Remote Cylinder Operating Levers

The inner remote cylinder operating lever in the hydraulic console controls the remote cylinder connected to the left-hand breakaway coupler. The next operating lever to the outside controls the remote cylinder connected to the lower right-hand breakaway coupler. If the tractor is equipped to operate three remote cylinders, the outside lever controls the cylinder connected to the upper right-hand breakaway coupler. Each lever has five operating positions. The inner lever has an additional position for float to permit the implement to follow ground contour.


OPERATING LEVER FOR LOWER RIGHT COUPLER
TO RETRACT
OPERATING LEVER FOR UPPER RIGHT COUPLER
OPERATING LEVER FOR LEFT COUPLER
TO EXTEND
R 14031

Remote Cylinder Operating Levers

(1) Neutral. Move the lever to the approximate center position in the quadrant.

(2) Slow Extend. Move the lever slightly rearward from neutral. The lever must be held until the desired adjustment is reached and in most applications this will raise the implement.

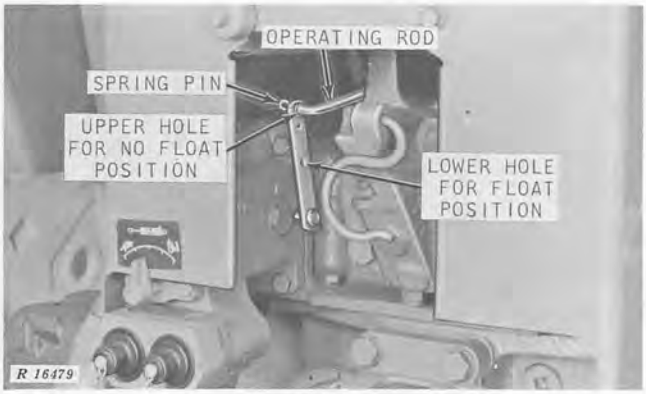
(3) Fast Extend. Move lever all the way to the rear. The lever will remain in this position until the end of the piston stroke when it will automatically return to the neutral position.

(4) Slow Retract. Move lever slightly forward from neutral. The lever must be held until the desired adjustment is reached. In most applications this will lower the implement.

(5) Fast Retract. Move lever forward to the first lock position. The lever will remain in this position until the end of the piston stroke when it will automatically return to the neutral position.

(6) Float (inner lever). After making a simple adjustment, the inner lever may be moved all the way forward in the quadrant to the float position. The lever will lock in the float position until pulled rearward to a new position.

To obtain float position, remove the spring pin shown in the illustration on page 30 and move the operating rod to the lower hole in the lever arm. Move the operating rod back to the upper hole when float position is no longer desired.


OPERATING ROD
SPRING PIN
UPPER HOLE FOR NO FLOAT POSITION
LOWER HOLE FOR FLOAT POSITION
R 16479

Float Adjustment

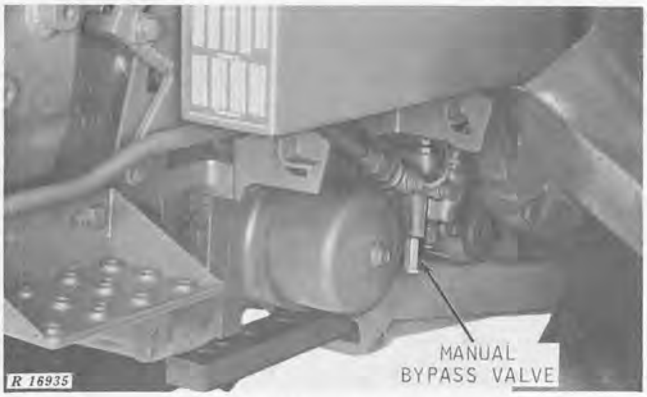
Adjusting Rate of Operation

The maximum rate of operation for each remote cylinder can be increased or decreased by turning the metering valve arm on the selective control valve. This adjustment controls the maximum flow of oil through the selective control valve to the remote cylinder or hydraulic equipment.

Turn the metering valve arm above the breakaway coupler clockwise to increase the flow of oil or counterclockwise to decrease it.

⚠ **CAUTION: Excessive operating speed may cause damage or injury. Full extension or retraction of the cylinder should require at least two seconds. Faster speeds may cause loss of detent action.**

Manual Bypass Valve

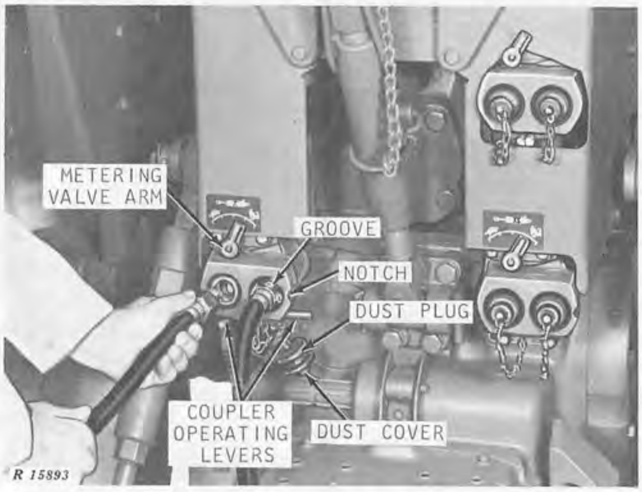


Manual Bypass Valve

To assist lowering of single-acting cylinders, a manual bypass valve is located on the left-hand side of the tractor. When using single-acting cylinders, open the valve by removing the cap and unscrewing the valve five turns. Replace the cap making sure that the valve does not turn when screwing the cap on.

IMPORTANT: When not using single-acting cylinders, close the manual bypass valve by turning it clockwise as far as it will go.

Connecting Hoses to Breakaway Couplers



Connecting Remote Cylinder Hoses

Breakaway couplers at the rear of the tractor are used to couple or uncouple remote cylinder hoses under pressure without loss of oil, regardless of whether or not the tractor engine is running. They also safeguard the hoses by permitting them to be pulled loose from the tractor without damage if a drawn implement should become disconnected from the tractor.

Remove the dust plugs. Remove the dust covers from the hose ends and store them on the coupler dust plugs. Always be sure the hose ends and the coupler receptacles are free from dirt before connecting the hoses.

Insert the hose end with groove into the right-hand receptacle with notch and the hose from the stop rod side of cylinder into the left-hand receptacle. (Moving the remote cylinder operating lever forward pressurizes the right-hand receptacle.) Move the coupler operating levers until they are at a right angle to the hoses. This lifts the valves in the hose end and the receptacle off their seats and permits oil to flow.

When the remote cylinder operating lever is moved rearward, the implement will normally rise if hoses are properly attached.

Bleeding Remote Cylinder

If the hoses have been disconnected from the remote hydraulic cylinder, or if a new cylinder or one that has been out of service is installed, all trapped air must be removed after the hoses are connected to the breakaway coupler. Place the cylinder with the hose end up. Start the engine. Extend and retract the remote cylinder seven or eight times to bleed all the air from the cylinder. Check the transmission-hydraulic system oil level after bleeding the cylinder.

Attaching Remote Cylinder to Implement

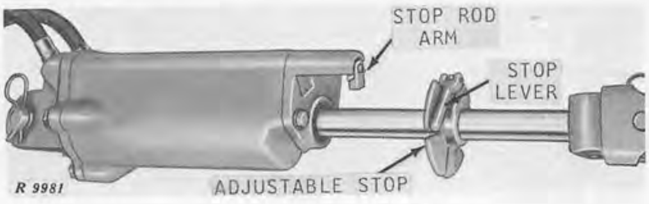
To install a remote hydraulic cylinder on most implements, remove the spring locking pins and pull the attaching pins. Set the cylinder in place and install the attaching pins and locking pins.

Many implements have a locking device to hold it in transport position when the remote cylinder is removed. Be sure to disengage the locking device before attempting to operate the remote cylinder. See your implement operator's manual.

Adjusting Remote Cylinder Stop

The remote hydraulic cylinder is equipped with an adjustable stop so that its working stroke may be adjusted to the requirements of the implement.

Hydraulic Stop Remote Cylinder



Hydraulic Stop Remote Cylinder

The total fast retract stroke may be varied from 0 to 8 inches.

To adjust the piston stroke, lift the stop lever and slide the adjustable stop along the piston rod to the desired position. Press the stop lever down to clamp the stop securely on the rod. If the stop does not clamp securely, lift the stop lever and rotate it clockwise before locking it in place.

NOTE: Be sure that the adjustable stop is clamped securely and is positioned so that the stop lever will not contact the stop rod arm.

Mechanical Stop Remote Cylinder

The stroke of a mechanical stop remote cylinder may be varied from 8 inches to 1-13/16 inches in 5/16 inch steps. To change the adjustment, pull out both spring-loaded stop rod pins, move the stop to the new position, and insert the pins.

IMPORTANT: Do not operate the remote cylinder unless BOTH stop rod pins are in place to lock both stop rods.

Removing Hoses From Breakaway Couplers

To remove a remote cylinder hose from the breakaway coupler, pull the hose rearward from the coupler. The coupler lever will automatically move to the rearward position.

After the remote cylinder hoses are removed, insert the dust plugs in the receptacles and place the dust caps on the hose ends.

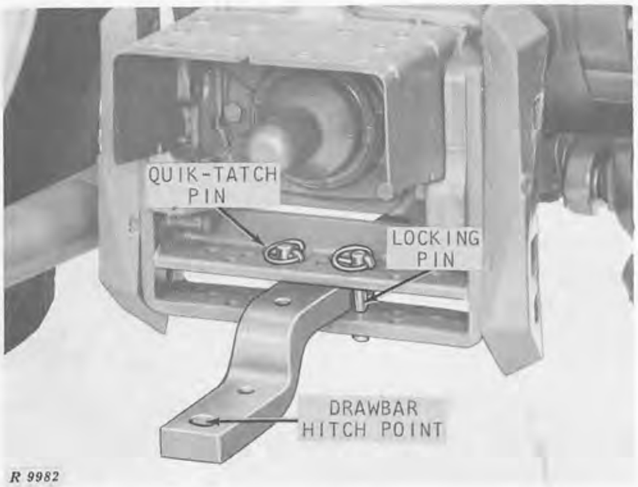
DON'T STICK YOUR NECK OUT
obey safety rules

R 2250

DRAWBAR ASSEMBLY

The drawbar assembly is used to hitch drawn implements to the tractor. Use the drawbar to pull towed loads only. Attach integral equipment to the 3-point hitch or to the Quik-Coupler.

NOTE: Before attaching a load to the drawbar, place the selector lever in the "D" (lower) position (page 22). Keep the lever in this position after the implement is attached.

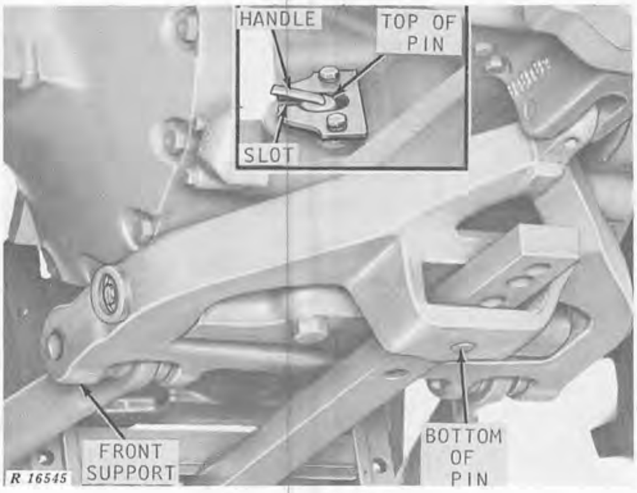


Offset Drawbar Installed in Short, Low Position

The drawbar adjustments and the adjustments on most drawn implements enable the operator to obtain a correct line of draft which is essential to obtaining a minimum amount of rear wheel slippage and the full amount of drawbar pull without raising the front wheels.

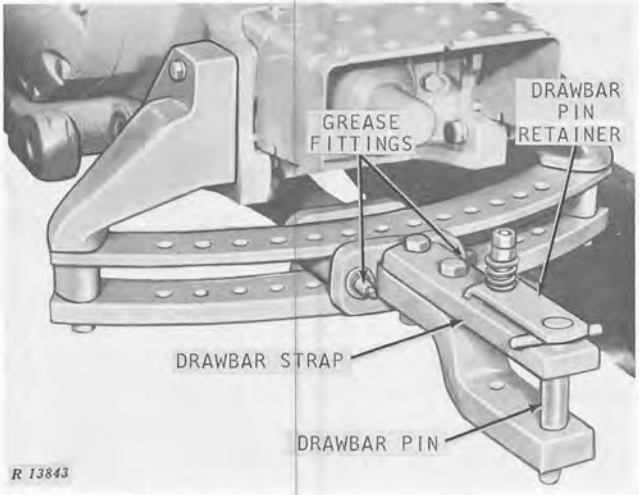
To change horizontal drawbar adjustment, move the locking pins and "Quik-Tatch" pins to another hole in the crossbar.

Vertical adjustment is made by turning the drawbar over. Make lengthwise adjustments by placing the drawbar pivot pin in another hole. To remove the drawbar pivot pin, line up the pin handle with the slot on the front support. Lift up the pin and move the drawbar to the desired position. Drop the pin so the handle passes through slot in front support. Then turn the handle to lock the pin in position. To prevent injury, never put your finger in the drawbar pivot pin hole.



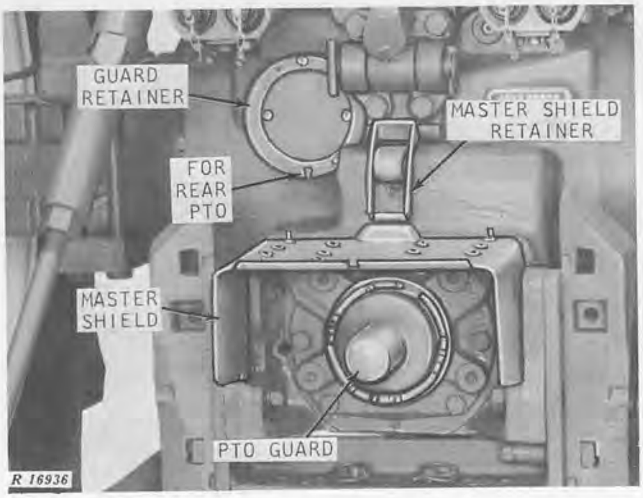
Drawbar Pivot Pin

The wide-swing drawbar assembly has a drawbar clevis consisting of a strap, pin, and a pin retainer. These parts are used when the towed implement does not have a clevis. The drawbar strap is bolted to the drawbar. When the drawbar offset is up, the pin retainer is bolted on top of the drawbar. When the offset is down, the pin retainer is bolted on top of the strap. Connect towed implements that also have a clevis to the drawbar, not the drawbar strap. Insert drawbar pin through the tractor clevis and only the top half of implement clevis.



Wide-Swing Drawbar Assembly with Clevis

POWER TAKE-OFF



Rear Power Take-Off

The PTO connections conform to ASAE Standards and Recommended Practices. The 1000-rpm drive will transmit full engine horsepower at the standard operating speed. The 540-rpm drive is NOT intended to transmit full engine horsepower. The 540-rpm drive is for use with implements requiring less than 75 horsepower that do not have provision for operating with the 1000-rpm PTO. Operate PTO-driven machines requiring more than 75 horsepower with the 1000-rpm PTO to obtain longer tractor power take-off life and improved performance.

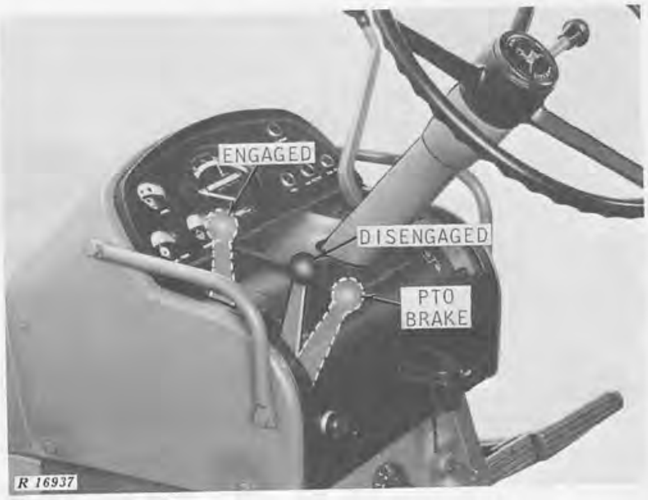
The power take-off may be 1000 rpm only or dual speed, 540 or 1000 rpm. A 6-spline stub shaft is installed on the rear dual speed PTO for 540-rpm operation. A 21-spline stub shaft converts the rear dual speed PTO to 1000 rpm.

The PTO shaft supplies continuous power as long as the engine is running and the PTO clutch lever is engaged.

Using PTO Clutch Lever

The power take-off shaft is controlled by the PTO clutch lever. Pushing the lever all the way forward engages the PTO clutch to operate the PTO. Pulling the lever rearward disengages the PTO clutch. Moving the lever further rearward against spring pressure applies the PTO brake.

When the PTO is not in use, move the lever rearward to the disengaged position.



PTO Clutch Lever Operating Positions

NOTE: The PTO brake is intended to stop only the PTO shaft, not the implement to which it is attached. When stopping PTO machines with large inertial loads, such as a combine or hammer mill, idle the engine to reduce PTO speed before disengaging the PTO clutch.

Removing PTO Guard

⚠ **CAUTION: Always remove the guard from the guard retainer and install it on the power take-off when the PTO is not being used.**

Remove the PTO guard only when the power take-off shaft is to be used.

To remove the guard, twist it counterclockwise. The guard is stored by placing it on the guard retainer and twisting it clockwise to lock it in place.

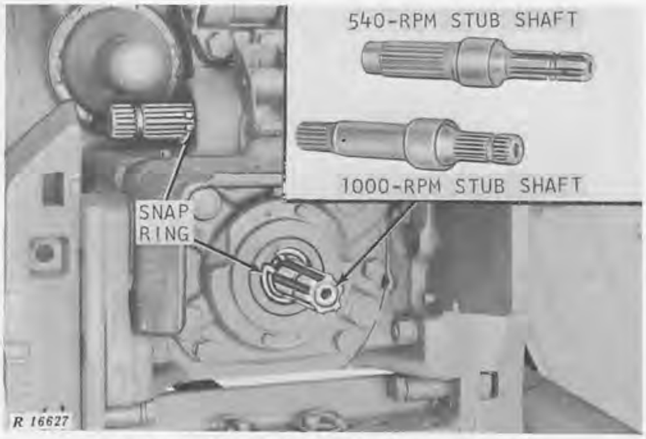
Removing Master Shield

⚠ **CAUTION: Remove the master shield only when necessary. Be sure that it is in place when the PTO guard is removed.**

When attaching an implement, it may be necessary to remove the master shield at the rear of the tractor. To do so, push forward on the lower end of the master shield retainer and lift the master shield from the tractor.

Converting Rear PTO Speed (Dual Speed Only)

To change 540-1000 rpm power take-off to the other speed, first, clean the dirt from the stub shafts.



540 Rpm Stub Shaft on Rear Power Take-Off

Then remove the snap rings that retain both stub shafts. Pull the upper stub shaft from its storage hole in the transmission case.

Pull the stub shaft for the old speed from the rear power take-off and quickly install the stub shaft for the new speed to prevent loss of transmission oil. Install the snap ring. It may be necessary to rotate the collar in which the snap ring fits to align the rear splines.

Place the old speed stub shaft in the storage hole in the transmission case to prevent loss of oil from the storage hole and to store the stub shaft so that the power take-off may be converted to the original speed. Install the snap rings.

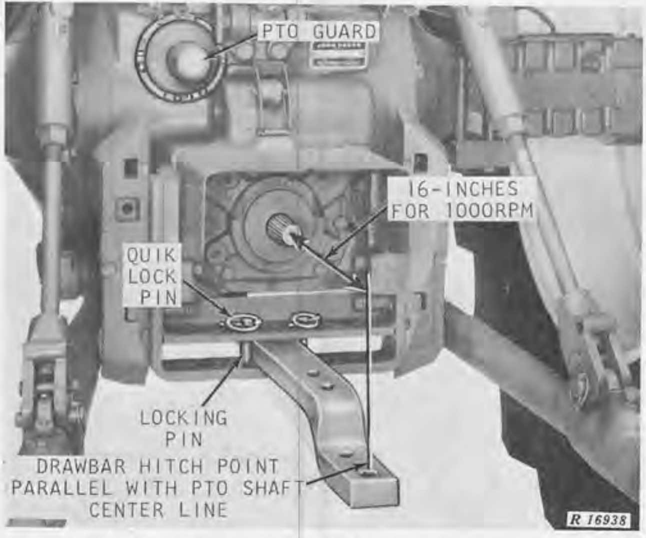
IMPORTANT: Before installing the stub shafts, be sure they are free from dirt or foreign matter.

Attaching PTO-Driven Implement

When the power take-off is to be used, lock the drawbar parallel to the PTO shaft with the drawbar offset DOWN. If present, remove the drawbar clevis. Position the locking pins as shown in the illustration.

If the power take-off is to be operated at 540 rpm, make lengthwise adjustment of the drawbar so that the hole in the drawbar end is 14 inches behind the end of the PTO shaft.

If the power take-off is to be operated at 1000 rpm, make lengthwise adjustment so that the hole in the end of the drawbar is 16 inches behind the end of the PTO shaft.



Drawbar Adjustment For PTO-Driven Implement

Possible damage to the universal joints on the drawn implement can be avoided if these simple adjustments are made before attaching the implement to the tractor.

With the engine stopped and the PTO clutch lever in the disengaged position, attach the PTO-driven implement and PTO SHIELDS to the tractor. With the engine running at a low speed, engage the PTO clutch by pushing the operating lever as far forward as it will go, starting the implement gradually. To obtain 540 or 1000 PTO rpm, the speed-hour meter pointer should be at the PTO mark when operating the implement under load. The hand throttle will usually be in the 1900-rpm load speed position. See the implement operator's manual when the implement is designed to operate at other PTO speeds.

CAUTION: Always make sure the tractor engine is stopped and the PTO clutch disengaged before attempting to clean out a PTO-driven machine or to adjust the implement hitch, or power take-off hook-up.

Safety Rules

Power take-off guards, shields, and other safety features are built into the tractor whenever possible. However, investigation of thousands of accidents shows that careless use of machinery causes a high percentage of accidents. You can avoid many accidents by observing the rules for safety given below. Study these rules carefully and insist that they be followed by those working with you and for you.

R 16560

Do not drive near the edge of a ditch or gully.

All power equipment should be operated only by those who are responsible and delegated to do so.

Provide a first-aid kit for use in case of accident. Use the proper antiseptics on scratches, cuts, and other injuries without delay to prevent the possibility of blood poisoning.

It is a good practice to mount a fire extinguisher on the tractor. Be sure that the extinguisher is properly maintained and be familiar with its proper use.

Whenever the tractor is stopped, place the shift lever or the speed selector in "PARK."

Keep a firm grip on the steering wheel at all times when speed is increased.

Reduce speed before turning quickly or applying brakes. Be sure that both wheels are braked simultaneously when making an emergency stop. Always drive slowly over rough ground. Drive at speeds slow enough to insure your safety.

Never operate the tractor engine in a closed garage or shed.

A protective Roll-Gard with seat belt is available for your tractor. A canopy that fits on top of the Roll-Gard is also available.

Under almost all operating conditions:

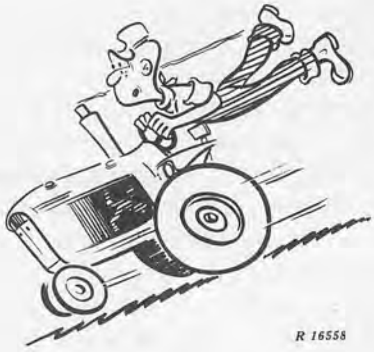
1. The use of a seat belt with the optional John Deere Roll-Gard is recommended.
2. Its use without roll-over protective equipment is not recommended.

The rate of tractor travel on hillsides and curves should always be such that there is no danger from tipping.

Be careful to prevent the tractor from tipping sideways if it strikes a hole, ditch, or other irregularity, especially when operating on hillsides.

When driving out of a ditch, gully, or up a steep hillside, engage the clutch slowly. Be prepared to disengage the clutch promptly should the front wheels rise off the ground. Observe the same precautions if the rear wheels become mired in soft ground or drop in a hole. Back the tractor out of these situations.

When pulling heavy towed loads at road speeds, use extreme caution and avoid hard applications of the tractor brakes at high speeds. When descending steep grades, select a sufficiently low gear to maintain control with minimum braking.


R 16558

Always keep the tractor in gear when going down steep hills or grades.

R 16565

Only one person—the operator—should be permitted on the tractor when it is in operation. Never allow a person to ride on drawbar or hitch.

Never attempt to start or to operate the tractor except from the operator's station.

When transporting or driving the tractor on a road or highway at night or during the day, use accessory lights and devices for adequate warning to the operators of other vehicles. In this regard check local governmental regulations. Various safety lights and devices are available from your John Deere dealer.

In local areas where flashing lights are prohibited by local regulations, be sure the flasher for warning lamps is disconnected.

Always dim the tractor headlights when meeting a vehicle. Be sure the headlights are adjusted so they will not blind the operator of an oncoming vehicle.

Do not oil, grease, or adjust the tractor while it is in motion.

Do not leave the engine running while the tractor or drawn equipment is being adjusted or repaired unless specifically recommended.

Do not leave an implement in the raised position when it is not in use. Always lower it to the ground.

When hitching drawn equipment to the drawbar, back the tractor past the clevis. Then move forward so that, in making the connection, the tractor will be moving away from the equipment.

When hitching a heavy towed load to the tractor, always hitch to the drawbar. When using a chain, be sure to take up the slack in the chain slowly.

Since loose clothing might catch in moving parts, always keep sleeves, jackets, or other clothing relatively tight and belted.

Before making adjustments on engine or electrical system, disconnect the battery ground cable. This prevents sparks which create a dangerous fire and explosion hazard and may cause damage or personal injury. This also prevents accidental starter operation.

Before using booster batteries, read instructions under additional batteries on page 5. To avoid sparks if a battery needs recharging, turn battery charger off before making connections or disconnections.

Add coolant to the radiator only when the engine is stopped or slowly idling. To avoid being scalded when the pressure-type filler cap is being removed, turn the cap slightly to the stop to relieve pressure before removing the cap.

Escaping hydraulic oil under pressure can cause personal injury; therefore, be sure all connections are tight and that lines and hoses are not damaged. Before disconnecting lines in the tractor hydraulic system, be sure to relieve all hydraulic pressure.

Do not attempt to disconnect or remove the brake accumulator without first relieving the oil pressure in the unit. See page 60 for instructions.

The accumulator unit is charged with dry nitrogen at a pressure of 500 pounds per square inch. Dry nitrogen must always be used to charge the unit.

R 16562

Use precaution in handling any type of tractor fuel. Never refuel the tractor when the engine is hot or running. Do not smoke while filling the fuel tank or servicing the fuel system.

Fuels and Lubricants

FUELS

The quality of fuel used is an important factor in obtaining dependable performance and satisfactory engine life. Suitable fuels must be clean, completely distilled, well-refined and non-corrosive to the fuel system parts. Be sure to use fuel of a known quality from a reputable supplier.

FUEL SPECIFICATIONS

Either Grade No. 1-D or Grade No. 2-D fuel as defined by ASTM designation D 975 for diesel fuels may be used. The Grade No. 2-D fuel is heavier and will produce more work per gallon. However; Grade No. 1-D fuel will give better performance under certain conditions. Use the chart below to determine correct grade of fuel.

Type of Engine Service	Ambient Air Temperature	Diesel Fuel Grade No.
Light load, low speed, considerable idling.	Above 80°F. Below 80°F.	2-D 1-D
Intermediate and heavy load, high speed, minimum of idling.	Above 40°F. Below 40°F.	2-D 1-D
At altitudes above 5,000 feet	All	1-D

As further assurance of satisfactory operation, use fuel having less than 1.0 percent sulfur, preferably less than 0.5 percent.

For maximum filter life, sediment and water should not exceed 0.10 percent.

To maintain proper fuel delivery during cold weather operation, use number 1-D diesel fuel with a pour point at least 10°F. below lowest ambient air temperature.

The cetane number should be 40 minimum. Low atmospheric temperature as well as high altitude operation may require use of a fuel with a higher cetane number.

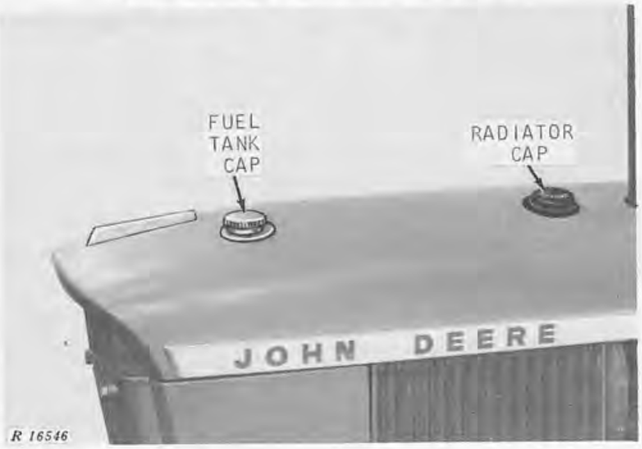
STORING FUEL

Prolonged storage of some diesel fuels may cause gum formation and clog the fuel filters.

The importance of proper fuel storage cannot be stressed too highly. Many engine difficulties can be traced to dirty fuel and fuel that has been in storage too long. To keep the fuel system in its most efficient condition, keep all dirt, scale, water, and other foreign matter out of the fuel; and avoid storing fuel for a long period of time.

Fuel should be stored in a convenient place outside of buildings.

FILLING THE FUEL TANK



Location of Fuel Tank Cap

The fuel tank on your tractor is located at the front under the hood in an enclosed, protected position. The fuel tank cap is located at the front left-hand side of the hood.

Fill the fuel tank at the end of each day's operation to prevent moisture from collecting and freezing in the fuel system. This will also assure an adequate fuel supply for the next day. Capacity of the fuel tank is 44 U.S. gallons.

LUBRICANTS

Effective use of lubricating oils and greases is perhaps the most important step towards low upkeep cost, long tractor life, and satisfactory service. Use only lubricants specified in this section. Apply them at intervals and according to the instructions in the lubrication section.

ENGINE LUBRICATING OILS

X2227

We recommend John Deere Torq-Gard engine oil for use in the engine crankcase. Compounded specifically for use in John Deere engines, Torq-Gard provides optimum performance for API service classifications MS, DG, DM, and DS.

Torq-Gard oil provides superior lubrication under all conditions for diesel engines. NEVER PUT ADDITIVES IN THE CRANKCASE. Torq-Gard oil was formulated to provide all the protection your engine needs. Additives could reduce this protection rather than help it.

If another oil is used, oil meeting Series 3 (S-3) specification will most nearly meet the requirements of a turbocharged diesel engine. This oil may also be identified with the API service classification DS. Select only recognized brands of oils furnished by a reliable manufacturer and supplier. As a further assurance of quality, use those oils bearing the following statement on the container or words to the effect: "Passes Car Manufacturer's MS Sequence Tests."

Depending on the highest expected prevailing temperature for the fill period, use oil of viscosity as shown in the following chart.

		Other Oils	
Air Temperature	**John Deere Torq-Gard Oil**	**Single Viscosity Oil**	**Multi-Viscosity Oil**
Above 32°F.	SAE 30	SAE 30	Not recommended.
−10°F. to 32°F.*	SAE 10W-20	SAE 10W	SAE 10W-30
Below −10°F.* *	SAE 5W-20	SAE 5W	SAE 5W-20

* *SAE 5W-20 oil may be used to facilitate starting.*

* * *Some increase in oil consumption may be expected when SAE 5W-20 or SAE 5W oils are used. Check oil level more frequently.*

TRANSMISSION-HYDRAULIC SYSTEM OILS

Use only John Deere Type 303 Special-Purpose Oil or its equivalent in the transmission-hydraulic system. Other types of oil will not give satisfactory service, and may result in eventual damage. This special oil, available from your John Deere dealer, may be used in all weather conditions.

GREASES

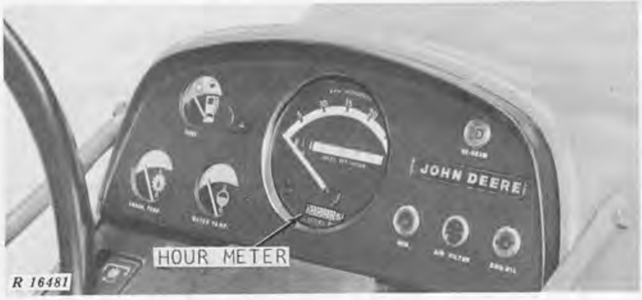
SAE multipurpose-type grease is recommended for most grease fittings. Wheel bearing grease is recommended for front wheel bearings. Application of grease as instructed in the lubrication section will provide proper lubrication and will keep contamination out of bearings.

STORING LUBRICANTS

Your tractor can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contamination.

Lubrication and Periodic Service

The intervals at which the various working parts of your tractor should be checked, lubricated, serviced, or adjusted are based on hours of operation.



Hour Meter

Use the hour meter to determine when periodic services are required. The hour meter, which operates whenever the engine is running, shows the accumulated hours of operation.

BREAK-IN PERIOD

The break-in period is vitally important to the long life and satisfactory performance of your tractor. During this period, follow the special engine operating instructions on page 7.

Engine Crankcase

After the first 100 hours of service, change the engine oil and oil filter. Thereafter change the filter at the normal interval. If, during the first 100 hours only, it is necessary to add engine oil, use Torq-Gard or the proper single viscosity engine oil meeting specification MIL-L-2104B.

Transmission-Hydraulic System

At the end of the first 100 hours, change the transmission-hydraulic system filter element. Then change the element after every 600 hours.

LUBRICATION AND SERVICE INTERVALS

The lubrication and service intervals for this tractor are based on operation under average conditions. When the tractor is operated under unusual conditions, such as excessive heat, cold, dust, frequent starts and stops, or with poor quality fuels or lubricants, the tractor should be serviced at MORE FREQUENT INTERVALS.

The chart which follows is a condensed list of the tractor components to be serviced at each interval and the service to be performed. Detailed instructions for performing each service are given on the pages which follow the chart. Each item in the chart is numbered, with the corresponding detailed procedure bearing the same number.

Perform the indicated services at the time intervals specified in the chart.

AS REQUIRED

Item No.	Component	Service	Capacity or Measurement	Type of Lubricant
1	Air cleaner	Clean element	. . . .	. . . .
2	Fuel filter	Replace	. . . .	. . . .
3	Fuel injectors	Clean	See your John Deere dealer for this service.	

DAILY OR EVERY 10 HOURS

Item No.	Component	Service	Capacity or Measurement	Type of Lubricant
4	Engine crankcase	Check oil level	To upper mark	See page 38 for recommended viscosity and type of engine oil.
5	Radiator	Check coolant level	1-1/2 inches above baffle in radiator	....
6	Fuel filter	Check sediment chamber	....	....
7	Front axle	Lubricate fittings	Several shots of grease	SAE multipurpose-type grease
8	Wide-swing drawbar	Lubricate fittings	Several shots of grease	SAE multipurpose-type grease
9	Front wheels and rear axle	Service only when tractor has been operated in extremely wet or muddy conditions. See detailed instructions.		

EVERY 50 HOURS

10	Power take-off clutch	Lubricate bearing	5 shots of grease	SAE multipurpose-type grease

* EVERY 100 HOURS

11	Engine crankcase	Drain and fill	16 U.S. quarts	See page 38.

EVERY 200 HOURS

12	Engine crankcase	Replace filter	....	....
13	Fan belt	Check tension	See page 56.	....
14	Clutch pedal	Adjust free travel	1-1/2-inch with engine running at 1900 rpm	....
15	Batteries	Check electrolyte level	To bottom of filler neck	....
16	Transmission	Check oil level	To top of "SAE" range	* * John Deere Type 303 Special-Purpose Oil
17	Brakes	Bleed brake system	....	....
18	Accumulator	Check operation	....	....
19	Tires	Check air pressure	See page 16.	....
20	3-point hitch	Lubricate fittings	3 or 4 shots of grease	SAE multipurpose-type grease
21	Front and rear wheels	Check tightness of nuts and bolts	See pages 12,14,15, and 16.	....

* *Change the transmission-hydraulic system filter element (Item No. 27) at the end of the first 100 hours of operation. Then change the element every 600 hours.*

* * *Or its equivalent.*

EVERY 600 HOURS

Item No.	Component	Service	Capacity or Measurement	Type of Lubricant
22	Air intake hoses	Check hose connections	....	....
23	Fuel tank	Drain sump	....	....
24	Intake and exhaust valves	Check valve clearance	Intake - 0.018 in. Exhaust - 0.022 in.	....
25	Injection pump	Check timing	See your John Deere dealer for this service.	
26	Engine	Check idle speeds	....	....
27	Transmission	Replace filter element; wash breather in fuel	....	....
28	Rear axle bearings	Lubricate	Grease appears at seals or 25 shots	SAE multipurpose-type grease

EVERY 1200 HOURS

29	Front wheel bearings	Clean, repack, and adjust	....	Wheel bearing grease
30	Transmission	Drain and fill; change filter element	* * 14 U.S. gallons	John Deere Type 303 Special-Purpose Oil*
31	Hydraulic pump	Clean pump filter	See your John Deere dealer for this service.	

EVERY SPRING AND FALL SEASON

32	Cooling system	Drain, flush, and fill	28 U.S. quarts	....
33	Engine crankcase	Drain and fill; replace filter	16 U.S. quarts	Same as Item No. 11

* *Or its equivalent.*

* * *Add approximately 4-1/2 gallons if equipped with Power Front-Wheel Drive.*

DETAILED PERIODIC SERVICES

AS REQUIRED

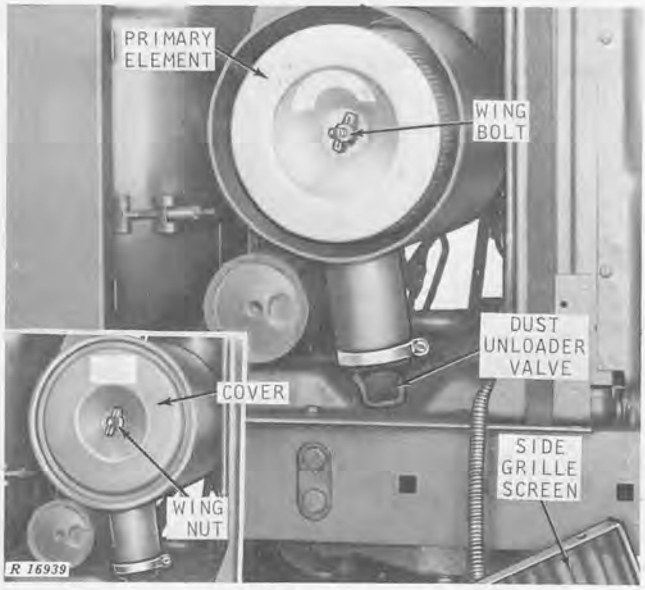
1. Cleaning Dry Air Cleaner Filter

Whenever the air cleaner indicator light (page 2) glows, clean the filter elements at the next refueling or regular daily or 10 hour service period. In dirty operating conditions, it may be necessary to service the element in the field.

NOTE: Indicator light will not signal correctly if a filter element is ruptured or if the element is not properly sealed in the cleaner housing. Loss of power or excessive smoke may indicate a restricted element. If this happens, inspect the elements and check the indicator light for proper operation.

Overspeeding or accelerating the engine too rapidly may cause the indicator light to glow prematurely. The element should be serviced if the light glows when the engine is operated at fast idle speed.

Remove the cover. Inspect the dust unloader valve for cracks, clogging, or fatigue. Clean or replace the

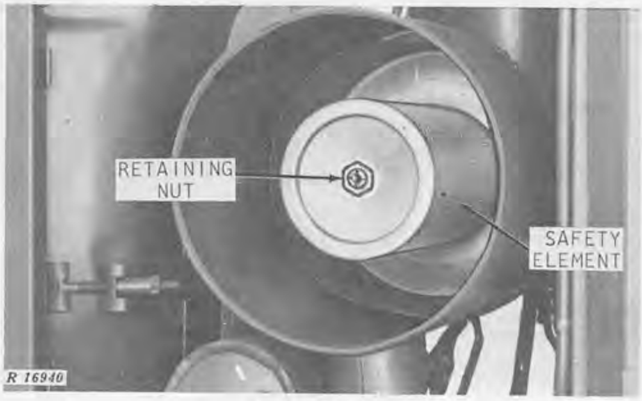


Air Cleaner

valve as necessary. Remove the wing bolt and primary filter element. Wipe clean the inside of the cleaner body. If the primary element is dry and dusty, clean the element as instructed with compressed air or water. If the element is oily or sooty, wash the element in filter element cleaner solution.

Both filter elements and the dust unloader valve must be in place before operating the engine.

Safety Element



Safety Element

The safety element catches particles that would pass through a ruptured primary filter element. Remove the safety element only when it is to be replaced. Never attempt to clean a safety element. Install a new safety element after one year of service or sooner if it causes excessive restriction. This is indicated by short intervals between cleaning of the primary filter element (one not clogged by soot). The dirt that plugs a safety element passes through a ruptured primary element or around a defective seal. When replacing a safety element, remove the retaining nut and element. Install the new element, making sure it is sealed at the gasket and at the retaining nut.

Temporary Field Service

When the element must be serviced in the field, install a spare element or pat the side of the element gently near the end with the palm of the hand as a temporary service. Rotate the element when patting so the entire circumference is covered. Thoroughly clean the element after returning to the service area. Do not tap the element against a tire or hard surface as this may dent or rupture the element.

Patting Element

Air-Cleaning Element

Cleaning Element with Compressed Air

Use the John Deere AR45035 dry element cleaning gun with compressed air and insert the cleaning gun as illustrated. Hold the air nozzle near the inside of the perforated sheet metal retainer and squeeze the handle. Air is forced through the element from the inside to the outside. Move the gun up and down the pleats cleaning as much of the loose dirt from the element as will come free.

IMPORTANT: Do not blow air from the outside to the inside or attempt to dust off the outside portion of the element with the air nozzle.

Pat the element lightly with the palm of the hand as instructed under temporary field service. The patting should be done carefully. Dirt will be loosened that was not previously blown out. Repeat the cleaning gun process. After cleaning inspect the element.

Cleaning Element with Water

Clean as much dirt from the element as possible with compressed air. Attach a garden hose to the receptacle portion of the cleaning gun using a rubber washer between the gun and hose (maximum water pressure of 40 psi). Flush the dirt from the element forcing the water from the inside of the element to the outside as shown below. Allow the element to dry completely and inspect the element before installing it.

Washing Element

Rinsing Element

Cleaning Sooty or Oily Elements

Blow dust from the element with compressed air or flush with clean water. Soak the element for at least 15 minutes in a solution of warm water (no hotter than your hand can stand) and John Deere Filter Element Cleaner (Part No. R36757) or its equivalent. Gently agitate element to flush out dirt. Rinse it THOROUGHLY from the inside to the outside using the cleaning gun or a free-running hose without nozzle (maximum pressure of 40 psi). Before reusing, allow the element to dry. This usually requires 24 to 72 hours. Do not oven-dry or use drying agents. Temperatures above 180°F. will shorten element service life. Protect it from freezing while drying. Using compressed air may rupture a wet element. Inspect the element.

IMPORTANT: Never wash elements in gasoline, fuel oil, or similar solvents. Do not oil elements.

Inspecting Element

After cleaning the element, inspect it for damage. Place a bright light inside the filter and discard any element that shows the slightest hole or rupture. If it is to be stored for later use, place it in a plastic bag and store in an element shipping container to protect against dust and damage.

Replace the filter element after one year of service or sooner when interval between cleanings becomes short, indicating that the element is not responding to cleaning. If filter gasket is damaged or missing, replace the element. If wing screw gasket is damaged or missing, replace the gasket.

Install and secure the element in place with wing screw and gasket washer. Be sure gasket washer is in good condition and is against the element. Install the cover. Replace side grille screen. Never operate the engine without the filter elements or unloader valve.

2. Replacing Fuel Filter

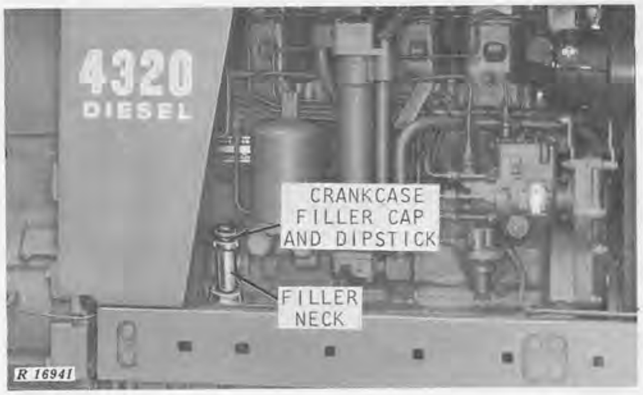
Replace as required, see page 51.

3. Cleaning Fuel Injectors

Whenever faulty or dirty injectors are indicated by abnormal engine operation, see your John Deere dealer.

DAILY OR 10-HOUR SERVICE

4. Checking Engine Crankcase Oil Level



Crankcase Filler Cap and Dipstick

With the tractor on level ground and the engine stopped for 10 minutes or more, loosen the knob on the crankcase filler cap and remove the filler cap and dipstick. Obtain the engine oil level on the dipstick with the filler cap seated evenly on the filler neck. If the oil level is down to the lower marks on the dipstick, add sufficient oil of the proper viscosity and quality to bring the oil level to the upper marks.

5. Checking Radiator Coolant Level

With the tractor on level ground, remove the radiator filler cap (next to the muffler) and check the coolant level. Add clean soft water (summer) or antifreeze (winter) if the coolant level is lower than 1-1/2 inches above the baffle in the radiator top tank.

CAUTION: Remove the radiator filler cap only when the coolant temperature is below the boiling point.The gauge pointer should be to the left of the vertical position. Then loosen the cap slightly to the stop to relieve pressure before removing the cap completely.

Check the pressurized cooling system for loose connections or leaks after adding coolant. If pressure is not maintained, loss of coolant and overheating will result. Tighten the filler cap.

6. Checking Fuel Filter

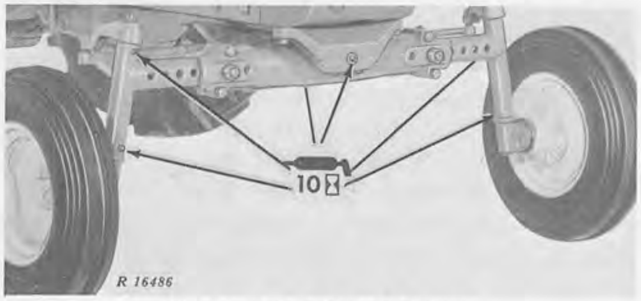
Check filter for sediment or water as instructed on page 50.

7. Lubricating Wide-Swing Drawbar

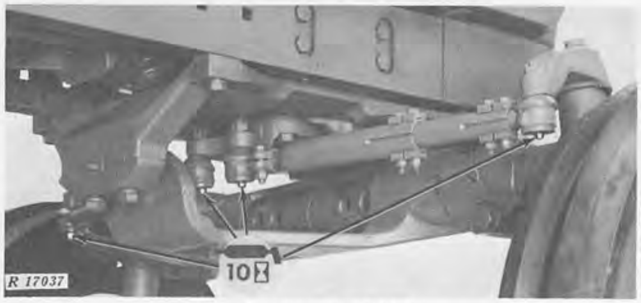
If the tractor has a wide-swing drawbar, apply several shots of SAE multipurpose-type grease to the drawbar rollers.

8. Lubricating Front Axle

If tractor has a wide front axle, apply several shots of SAE multipurpose-type grease to the pivot pins and steering spindles (6 fittings). Apply a shot of SAE multipurpose-type grease to the four tie rod grease fittings.

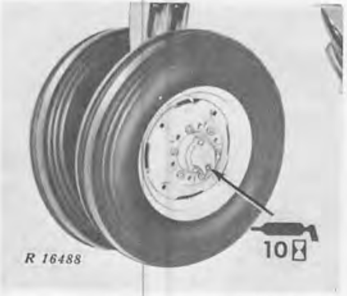


Wide Front Axle Grease Fittings



Tie Rod Grease Fittings

9. Lubricating Front Wheels (All Tractors Except Power Front-Wheel Drive) and Rear Axles



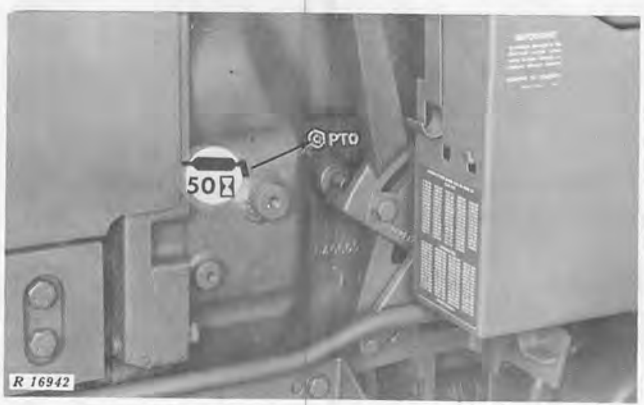
Front Wheel Grease Fitting

When the tractor is being operated in extremely wet and muddy conditions, grease each front wheel and rear axle (page 47) daily or every 10 hours. To do so, remove the pipe plugs, install fittings, and apply several shots of SAE multipurpose-type grease. CONTINUE lubricating the front wheels at this interval until the bearings can be cleaned and packed with wheel bearing grease.

50-HOUR SERVICE

Perform items 4 through 9 in the regular daily or 10-hour service in addition to the following.

10. Lubricating PTO Clutch Bearing



PTO Clutch Bearing Grease Fitting

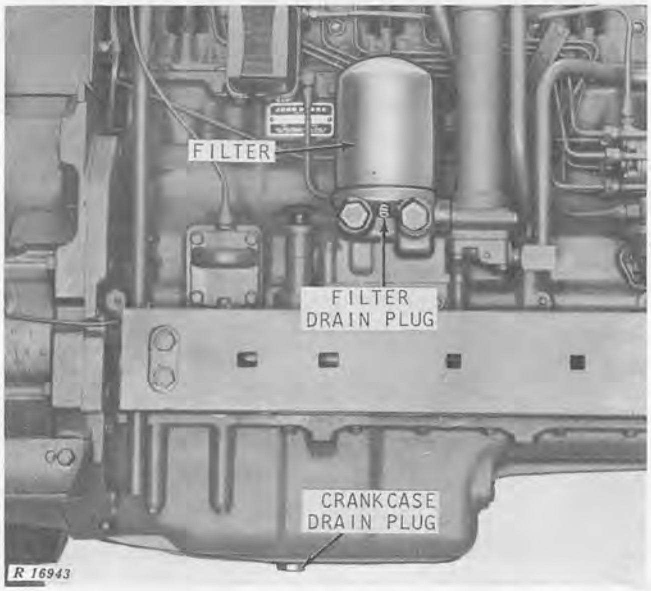
After every 50 hours of PTO operation, lubricate the PTO clutch bearing with 5 shots of SAE multipurpose-type grease.

100-HOUR SERVICE

NOTE: On new tractors, replace the transmission-hydraulic system filter element after the first 100 hours of operation. Then change the element after every 600 hours of operation.

Perform items 5 through 9 in the regular daily or 10-hour service; item 10 in the 50-hour service in addition to the following.

11. Draining and Filling Crankcase



Oil Filter and Crankcase Drain Plug

With the engine warm, remove the crankcase drain plug and drain the oil from the crankcase.

Install the drain plug and add new oil of the proper viscosity and service classification (page 38). Run the engine at slow idle speed to fill the oil filter. Running the engine at high speeds or accelerating the engine with the oil pressure indicator light glowing may damage the turbocharger. Check for leaks around the crankcase drain plug. Retighten if necessary. The oil level on the dipstick 10 minutes after stopping should be at the upper marks. The capacity is 16 U.S. quarts.

Keep a record of all oil and filter changes on the oil and filter change stickers that come with the filters.

200-HOUR SERVICE

Perform items 5 through 9 in the regular daily or 10-hour service; item 10 in the 50-hour service; item 11 in the 100-hour service in addition to the following.

12. Changing Crankcase Oil Filter

While draining the crankcase oil (Item No. 11), change the crankcase oil filter. The crankcase oil filter may be drained by removing the filter drain plug. Remove the filter element by turning it counterclockwise. Clean the filter mounting pad. Apply a thin film of oil to the sealing ring and screw the new element down by hand until it is tight. Capacity with filter change is 16 U.S. quarts.

IMPORTANT: The element does not have a bypass valve. Replace only with a genuine John Deere filter element from your John Deere dealer.

13. Checking Fan Belt Tension

Check the belt tension as instructed on page 56.

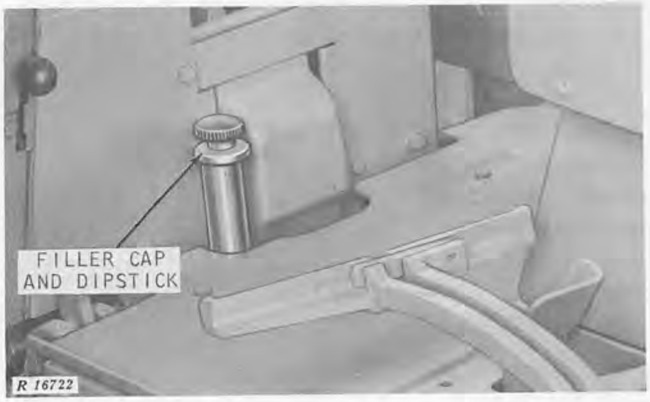
14. Adjusting Clutch Pedal Free Travel

With the engine running at 1900 rpm, adjust the clutch pedal free travel to 1-1/2 inches as instructed on page 59.

15. Servicing the Batteries

Clean the batteries and check the electrolyte level of each battery cell. See page 55.

16. Checking Transmission-Hydraulic System Oil Level



Transmission-Hydraulic System Filler Cap and Dipstick

With the tractor on level ground, check the transmission-hydraulic system oil level with the filler cap and dipstick. If the oil level is down to the "ADD" mark at the bottom of the "SAFE" range on the dipstick add John Deere Type 303 Special Purpose Oil or its equivalent to bring the oil level to the top of the "SAFE" range.

17. Bleeding Power Brakes

Bleed the power brakes as explained on page 59.

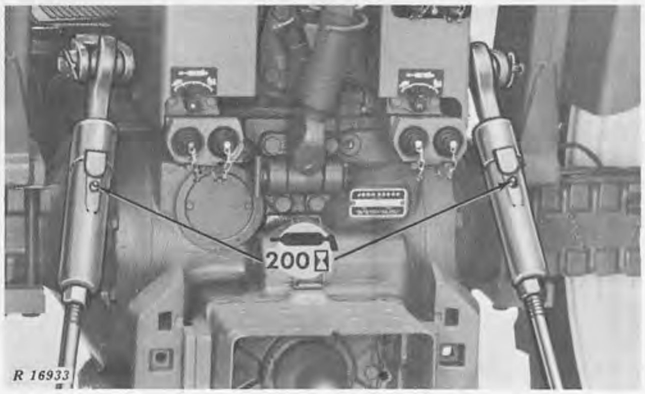
18. Checking Accumulator

After bleeding the brakes, check the accumulator as instructed on page 59.

19. Checking Tire Inflation Pressure

Check the tires for damage and correct inflation pressures. See pages 16 and 60.

20. Lubricating 3-Point Hitch



3-Point Hitch Grease Fittings

Grease the 3-point hitch by applying 3 or 4 shots of SAE multipurpose-type grease at each fitting.

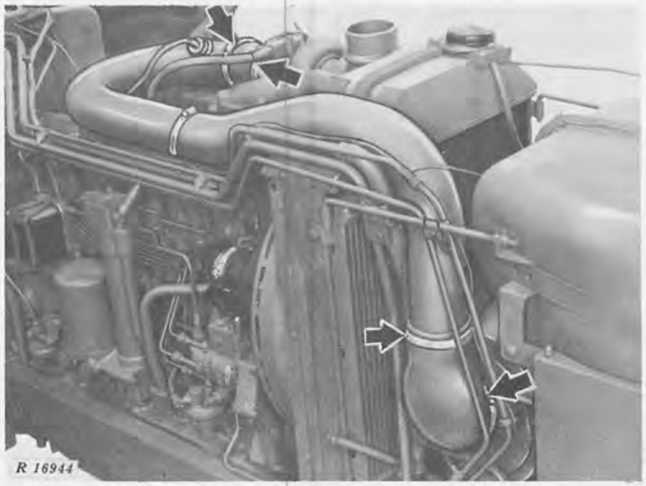
21. Checking Tightness of Front and Rear Wheels

Every 200 hours or whenever required, check the tightness of the front wheel bolts (page 12) and rear wheel nuts and bolts (pages 14, 15, and 16). Never operate a tractor with a loose wheel.

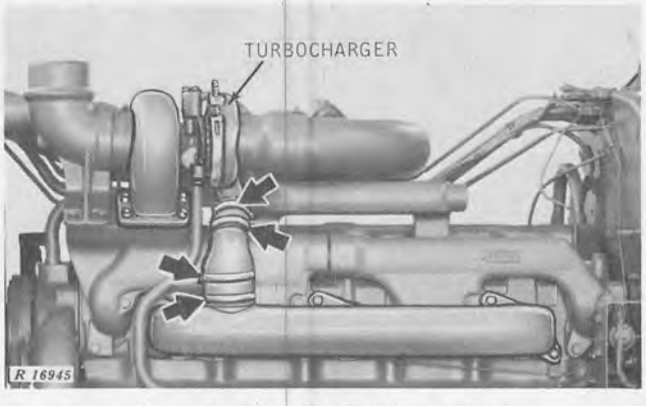
600-HOUR SERVICE

Perform items 5, 7, 8, and 9 in the regular daily or 10-hour service; item 10 in the 50-hour service; item 11 in the 100-hour service; items 12 through 21 in the 200-hour service in addition to the following.

22. Checking Air Cleaner Connections



Air Intake Pipe Connections



Turbocharger-to-Manifold Connections

Remove the hood and check the clamps on the hoses for tightness which connect the air cleaner, turbocharger, and the air intake manifold. This will prevent dirt or foreign matter from entering through loose connections.

23. Draining Fuel Tank Sump

See page 50.

24. Checking Valve Clearance

See page 54.

25. Checking Injection Pump Timing

See your John Deere dealer for this service.

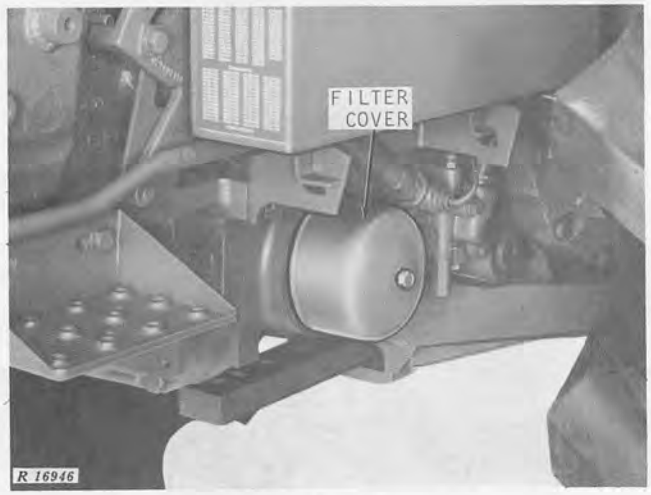
26. Checking Engine Idle Speeds

With the engine at operating temperature, use the speed-hour meter to check the engine speeds:

Throttle Positions	Throttle	Load Speed	No Load Idle Speed
Up	Hand	......	800 rpm
Down, Knob In	Hand	1900 rpm	2150 rpm
Down, Knob Out	Hand	2200 rpm	2400 rpm
Pedal Down	Foot	2500 rpm	2650 rpm

If the idle speeds need to be adjusted or if there is doubt as to the accuracy of the speed-hour meter, consult your John Deere dealer.

27. Replacing Transmission-Hydraulic System Oil Filter Element and Cleaning Breather Filter

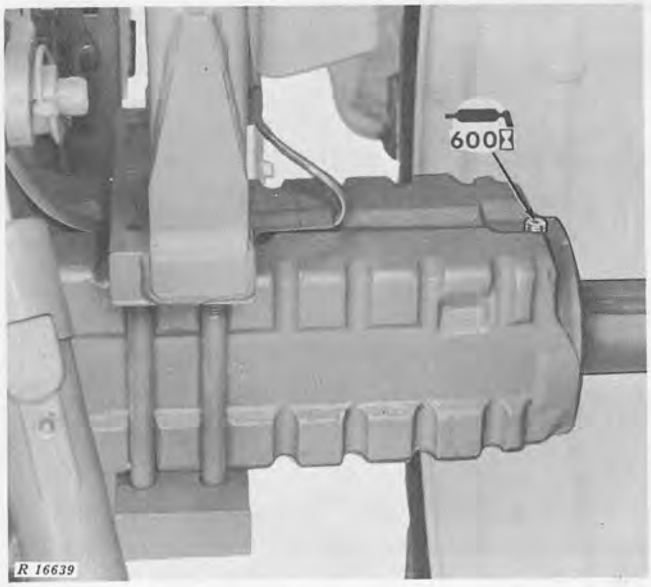


Transmission-Hydraulic System Filter Cover

With the engine stopped, remove the transmission-hydraulic system oil filter cover and pull out the oil filter element. Install new filter element. Check condition of packing between element and retainer. Replace filter cover gasket. Install and tighten the filter cover to 45 ft-lbs torque.

Remove the transmission-hydraulic system filler cap (page 45) and wash the breather filter inside the cap in diesel fuel.

28. Lubricating Rear Axle Bearings



Rear Axle Grease Plug

Grease the rear axle bearings by removing the pipe plug on each end of the axle housing, installing a grease fitting, and applying SAE multipurpose-type grease at each fitting until grease appears at the axle seals. (If rear wheel weights obscure rear axle seal, apply the maximum of 25 shots of grease.)

1200-HOUR SERVICE

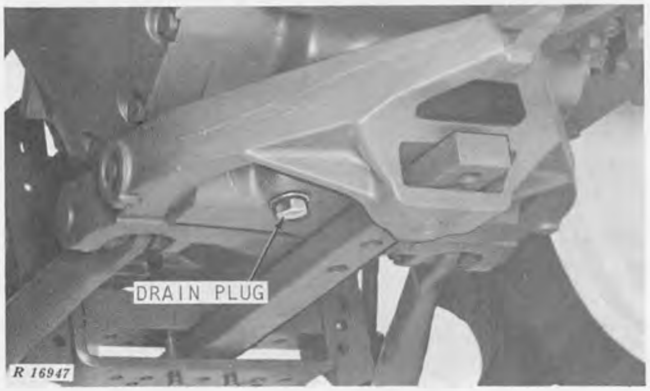
Perform items 5,7, and 8 in the regular daily or 10-hour service; item 10 in the 50-hour service; item 11 in the 100-hour service; items 12 through 16 and 18 through 21 in the 200-hour service; items 22 through 28 in the 600-hour service in addition to the following.

29. Lubricating Front Wheel Bearings

(All Except Power Front-Wheel Drive)

Clean and pack the front wheel bearings and oil seal. Adjust the front wheel bearings. See page 60.

30. Draining and Filling Transmission-Hydraulic System

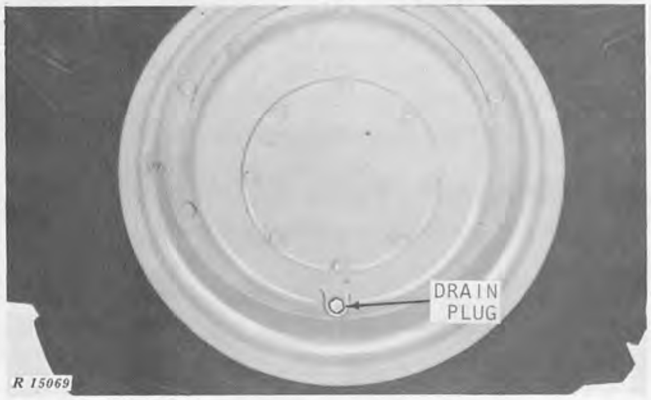


Transmission-Hydraulic System Drain Plug

With the engine warm, remove the transmission-hydraulic system drain plug and drain the oil. Replace the drain plug.

Add new John Deere Type 303 Special-Purpose Oil or its equivalent at the filler cap. Bring the oil level on the dipstick to the top of the "SAFE" range. Transmission-hydraulic system capacity when drained and the filter changed is 14 U.S. gallons.

On Power-Front Wheel Drive tractors, position the drain plug on the wheel at the bottom, clean the area around the plug, protect the tire, and drain each wheel housing. Position the drain hole near the top and put 2 quarts of John Deere Type 303 Special-Purpose Oil or its equivalent in each front wheel. Install the drain plugs. With transmission oil level at the top of the "SAFE" range, add 2 extra gallons. Operate the front drive for 2 or 3 hours and ADD oil to the transmission to bring it to the proper level. The front wheels hold approximately 4-1/2 gallons (2-1/4 gallons each).



Power Front-Wheel Drive Drain Plug

31. Cleaning Hydraulic Pump Valve Filter

See your dealer.

SEASONAL SERVICE

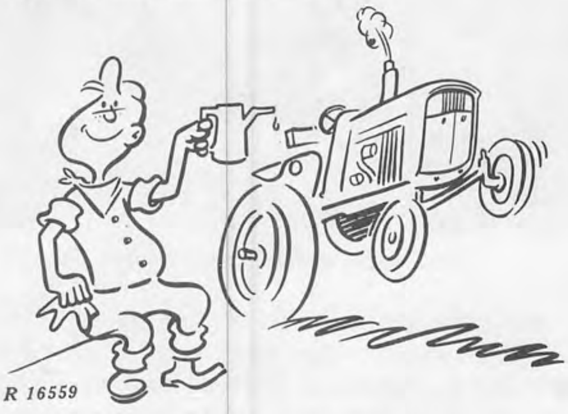
Before and after the winter season, perform the following services. When placing the tractor in storage, use the instructions on page 68.

32. Cleaning Cooling System

See page 52.

33. Draining and Filling Crankcase

Drain and fill the crankcase with the proper oil to conform with expected temperature conditions (page 38). Replace the filter element.



The Tractor Will Respond to Proper Lubrication.

Service

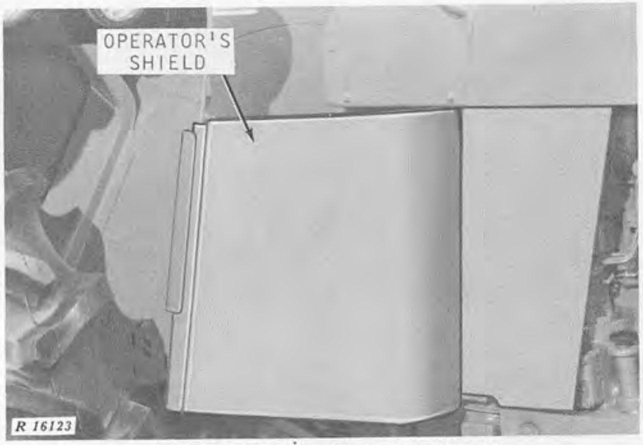
Your John Deere dealer offers complete tractor service. His factory-trained personnel have access to accurate, detailed service information. Some of the dealer services are listed below.

(1) Engine tune-up.
(2) Injection pump and injector service.
(3) Electrical system checks.
(4) PTO clutch adjustment.
(5) Hydraulic system service.
(6) Fuel system service.
(7) Cooling system service.
(8) Parts service.

REMOVING HOOD

To remove the hood, first remove the cowl retaining screws and lift the cowl off the tractor. Then pull down the spring loaded latch at the front of each side shield. Pull outward at the top edge of the shield and lift the shield off. Remove the hood retaining cap screws.

Pull out slightly on the top edge of each side grille screen, lift the screens from the tractor, and allow them to hang by the springs. Turn the hood latch handles out. Remove the radiator and fuel tank caps.



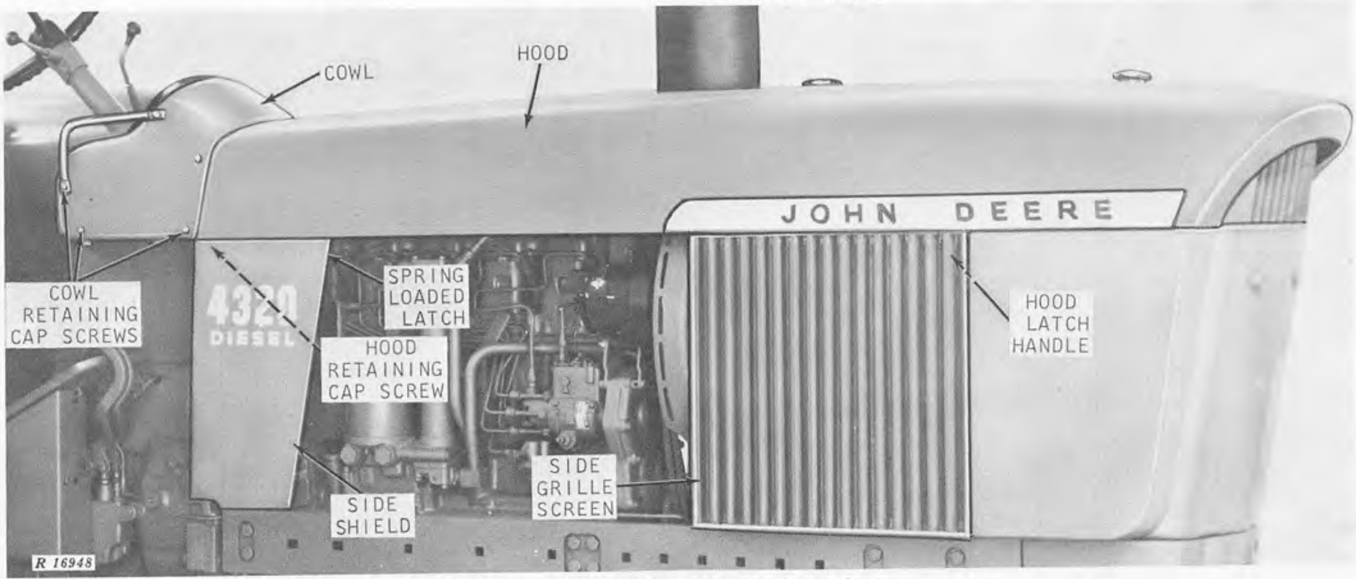
Standard Tractor Operator's Shield

Lift hood off and install the radiator and fuel tank caps to prevent entry of foreign material.

On standard tractors, remove the right-hand operator's shield to gain access to the timing hole for turning the engine or timing the engine.

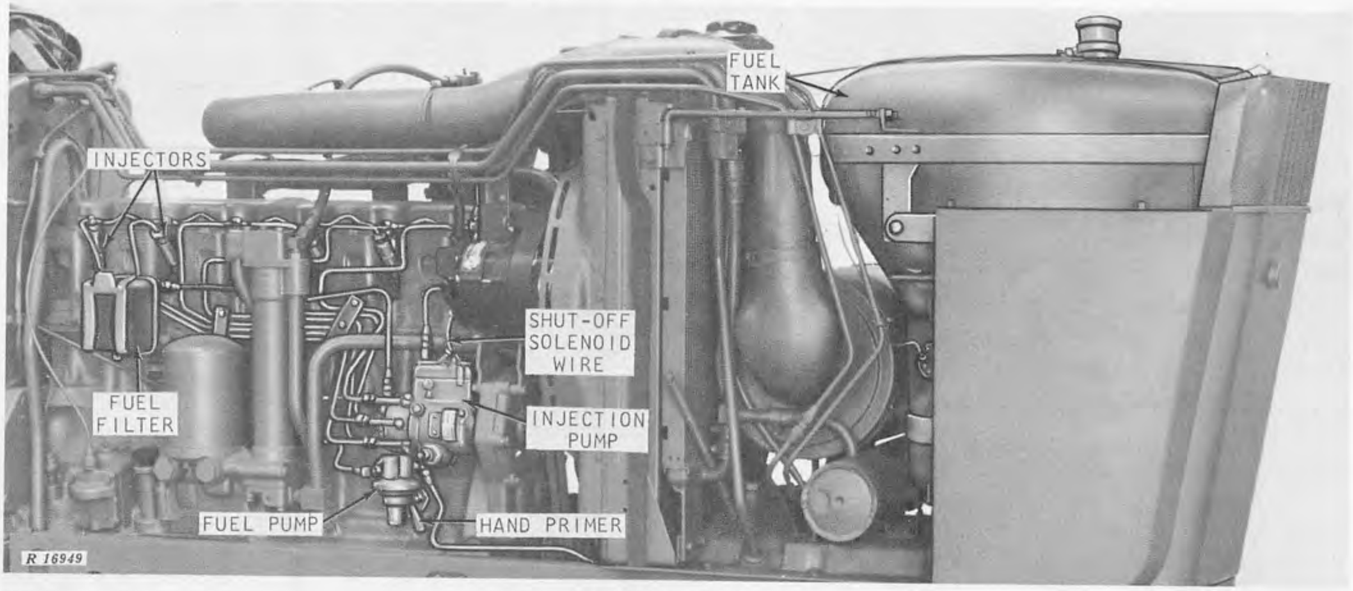
When washing or cleaning the tractor with the hood off, do not allow water or steam to enter the air intake opening at the air cleaner.

Do not run the engine while steam cleaning or washing near the injection pump. Excessive heat or cold when the engine is running can cause injection pump damage.



Cowl, Hood, Side Shields, and Side Grille Screens

DIESEL FUEL SYSTEM



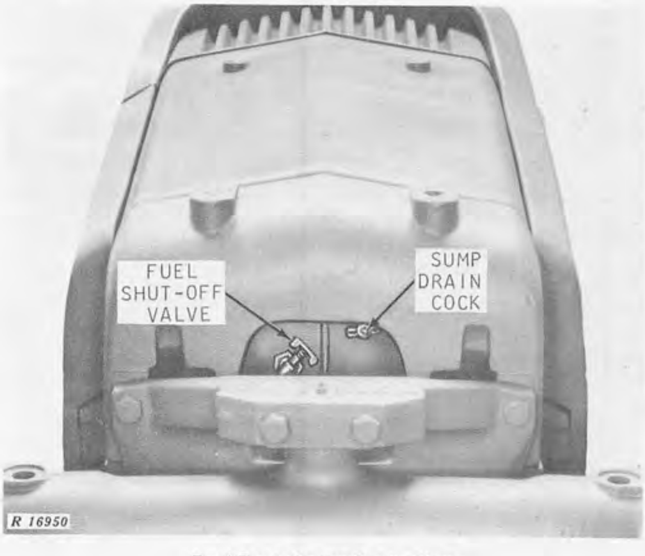
Diesel Fuel System

Description

The diesel fuel system consists of the fuel tank, fuel pump, fuel filter, injection pump, fuel injectors, and the connecting pipes. Fuel tank capacity is 44 U.S. gallons.

Modification or alteration of the injection pump, the injection pump timing, or the fuel injectors in ways not recommended by the manufacturer will terminate the warranty obligation to the purchaser. See your copy of the John Deere Warranty for this tractor.

Inspection and Cleaning

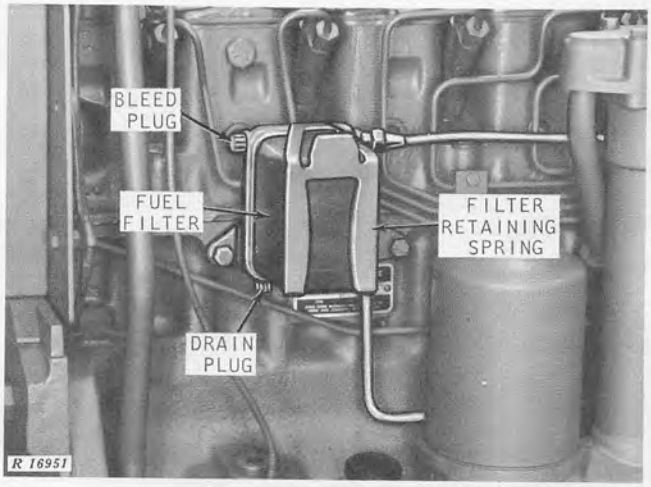


Fuel Tank Sump Drain Plug

Proper servicing of the fuel system is important. Visually inspect the fuel filter daily or after every ten hours of operation. If there is water or an excess of foreign matter at the bottom of the filter, loosen the filter drain plug and drain the foreign matter or water from the filter. Bleed the fuel filter.

If water was present in the filter, drain all the water from the fuel tank to prevent the water from plugging the filter. A stand pipe on the fuel shut-off valve provides a sump at the bottom of the fuel tank to trap the water. To drain the sump, open the drain cock.

Improper fuel storage may necessitate excessive cleaning of the fuel system. After correcting the

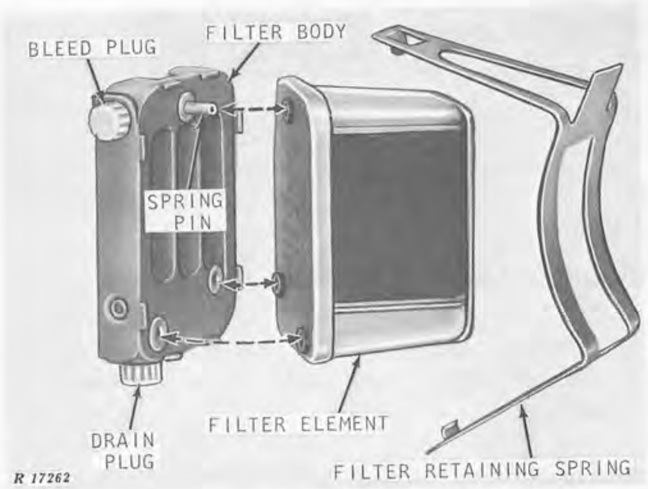


Fuel Pump and Fuel Filter

cause of contaminated fuel, drain the fuel tank sump and fuel filter. Have your John Deere dealer check the fuel system.

Replacing Filter Element

The fuel filter with dual stage element prevents dirty fuel from reaching the fuel injection pump and the fuel injectors. The fuel filter will require occasional replacement to maintain adequate flow of fuel to the injection pump for full tractor horsepower. The frequency of this service will be determined by the cleanliness of available fuel and the care used in fuel storage.



Fuel Filter

To release the filter retaining spring, press inward on the tab to disengage the top hook of the spring. (If spring has two tabs, squeeze tabs together to disengage the top of the spring.) Pull filter off and push new filter over the spring pin. Hook the bottom of the filter retaining spring first and the top last.

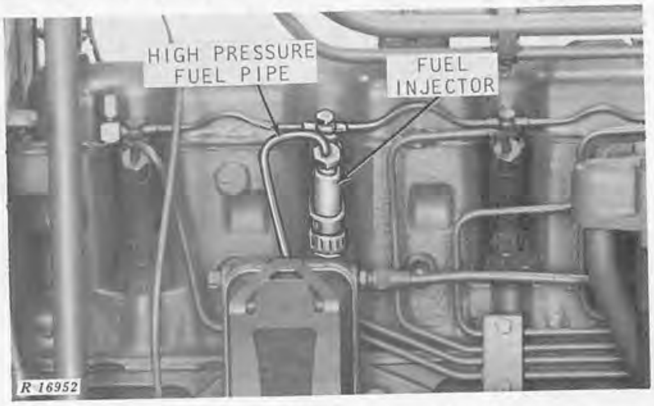
IMPORTANT: Any dirt lodged in the spring pin groove or at the end of the spring pin by cleaning efforts will be washed into the injection system and may result in severe damage to the injection pump or nozzles.

Fuel Injectors

Occasionally fuel injectors may require removal for inspection or service. The frequency of this service will be determined by the type of operation, fuel cleanliness, and fuel quality.Whenever faulty or dirty injectors are indicated by abnormal engine operation, see your John Deere dealer.

IMPORTANT: Do not attempt to remove and disassemble injectors as special tools are required.

Bleeding Fuel System



Fuel Injector and High-Pressure Fuel Pipe

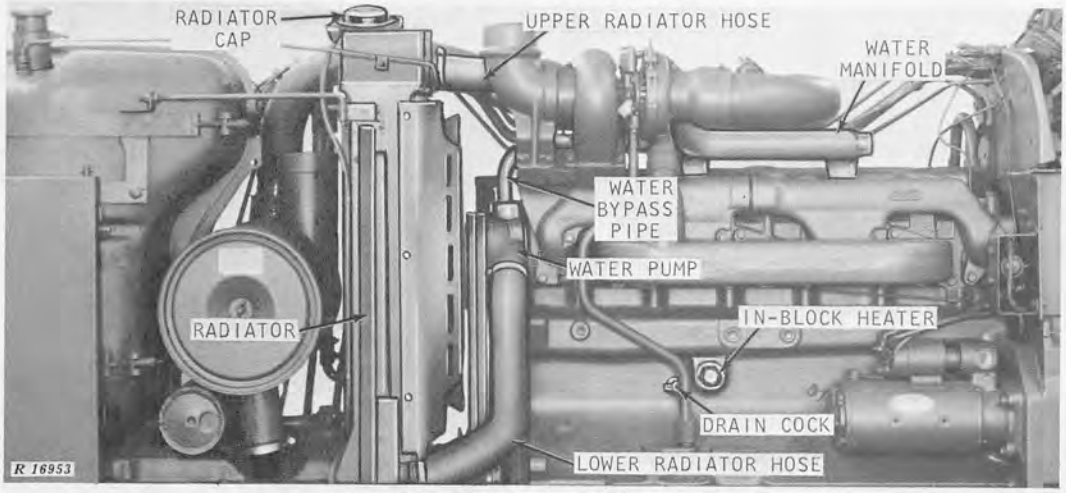
When the fuel filter is removed or the tractor runs out of fuel, bleed the air from the fuel filter.

To do so, loosen the filter bleed plug. Pump the primer lever on the fuel pump until most of the air bubble in the filter is gone and fuel flows from the bleed plug. Tighten the bleed plug and leave the primer lever in the down position.

NOTE: If the primer does not pump fuel and no resistance is felt at the upper portion of the lever stroke, turn the engine with the starter to change the fuel pump cam position.

If the engine misses after bleeding the filter and will not smooth out, bleed the entire fuel system. First bleed the filter and then loosen the high-pressure fuel pipe on three or more injectors. With the hand throttle in the 1500-rpm position, turn the engine with the starter until fuel without foam flows from the loose connection (the engine may start running). Tighten the connections and finish bleeding the other injectors by running the engine until is is operating smoothly.

COOLING SYSTEM

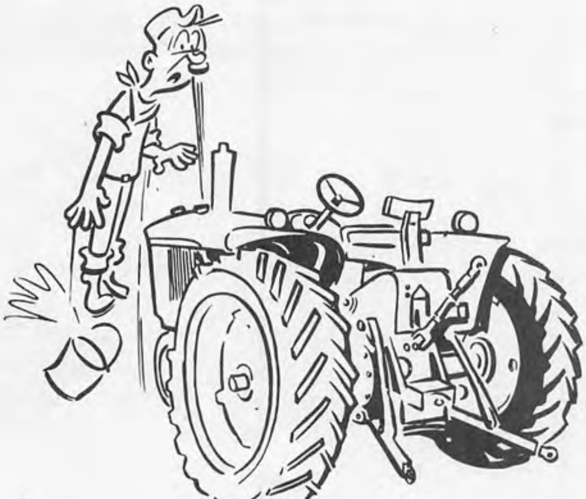


Cooling System

Description

The cooling system consists of the radiator, radiator filler cap, water manifold, thermostats, water bypass pipe, water pump, upper and lower water hoses, in-block coolant heater, and coolant passages within the cylinder head and block.

The cooling system is pressurized and all components must be tight and in good condition for proper operation. Loss of pressure will result in overheating and loss of coolant.



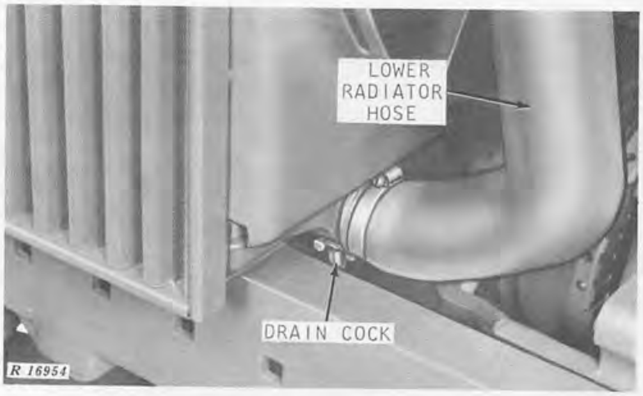
CAUTION: Remove the radiator filler cap only when the coolant temperature is below the boiling point (the gauge pointer should be to the left of the vertical position). Then loosen the cap slightly to the stop to relieve pressure before removing the cap completely.

The pressure valve in the radiator cap releases at 6-1/4 to 7-1/2 pounds. Capacity of the system is 28 U.S. quarts.

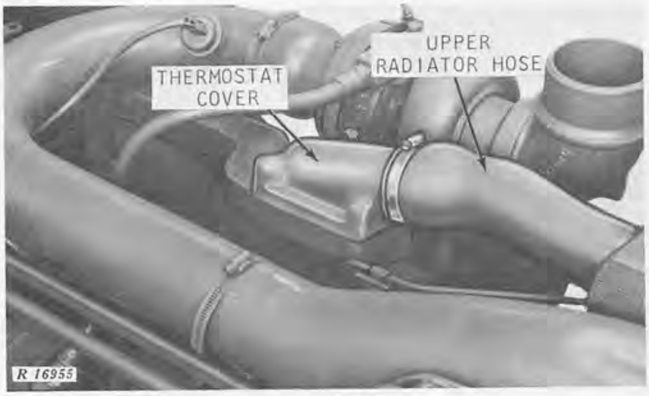
Cleaning Cooling System

For efficient operation, the cooling system should be drained, flushed, and filled before and after the winter season.

To perform this service, drain the system by opening the drains on the engine block and radiator. Remove the hood (page 49) and disconnect the upper water hose from the thermostat cover. Then remove the thermostat cover retaining cap screws, lift the cover off, and remove the thermostats. Replace the thermostat cover and connect the upper water hose. Close the radiator and the engine block drains and fill the system.



Radiator Drain Cock



Thermostat Cover

Run the engine until it reaches operating temperature to stir up possible rust or sediment. Stop the engine and drain the coolant from the system before the rust or sediment settles.

Close the drains. Fill the cooling system with a solution composed of a good commercial radiator cleaner and water. Follow the instructions with the cleaner.

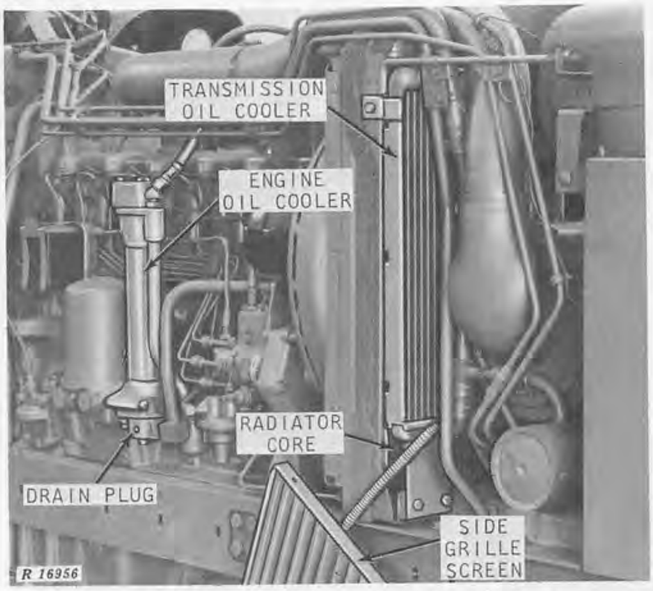
After cleaning the cooling system, fill it with water to FLUSH the system. Install the filler cap and run the engine until it reaches operating temperature. Then stop the engine and drain out this flushing water.

Remove the thermostat cover and replace the thermostats. Replace the cover and connect the upper water hose. Then, close the drains and fill the cooling system to 1-1/2 inches above the baffle in the radiator top tank. Use CLEAN SOFT WATER and, for protection from freezing, ethylene glycol type antifreeze or, during non-freezing weather, John Deere T19566T Summer Coolant Conditioner or its equivalent. Recheck coolant level after starting the engine.

Well water or tap water usually contains impurities which corrode, cause rusting, or clog a cooling system and reduce cooling system efficiency. In some areas of the country, these impurities will soon damage a cooling system. See your John Deere dealer for complete cooling system care.

IMPORTANT: Never pour hot water into a cold engine or cold water into a hot engine. You may crack the head or the cylinder block. Do not operate the tractor without water for even a few minutes.

Cleaning Side Grille Screens, Radiator Core, and Oil Cooler



Side Grille Screen, Radiator Core, and Oil Cooler

Release the side grille screens and examine all air passages in the radiator core. Remove all chaff and dirt from the radiator and transmission oil cooler and straighten bent fins. Remove all chaff and dirt from the screens and replace them.

Preparing for Cold Weather

Prior to cold weather, be sure to drain and flush the cooling system. Fill the system with a recognized brand of antifreeze solution to eliminate the need for daily filling and draining of the cooling system.

Antifreeze

Use only ethylene glycol (permanent type) antifreeze which contains a rust inhibitor but does not contain a stop-leak additive.

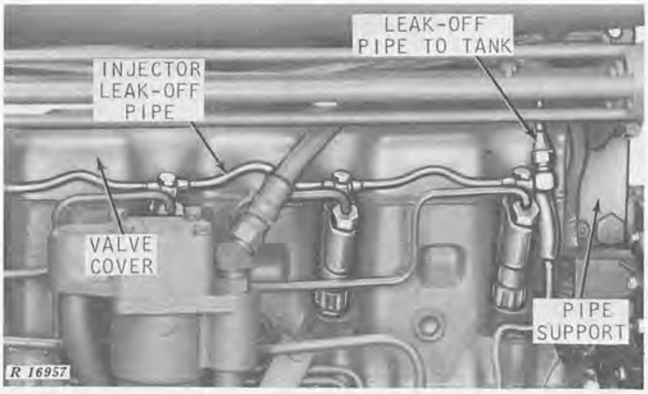
After adding the antifreeze solution, run the engine until it reaches operating temperature to allow the thermostats to open. This will make sure that the solution is circulated throughout the entire cooling system.

Draining

If the cooling system is drained to prevent freezing, be sure to drain the engine oil cooler (see the illustration above) as well as the radiator and the engine block. On tractors with a cab heater, see page 63. When refilling the system be sure to recheck the coolant level after starting the engine.

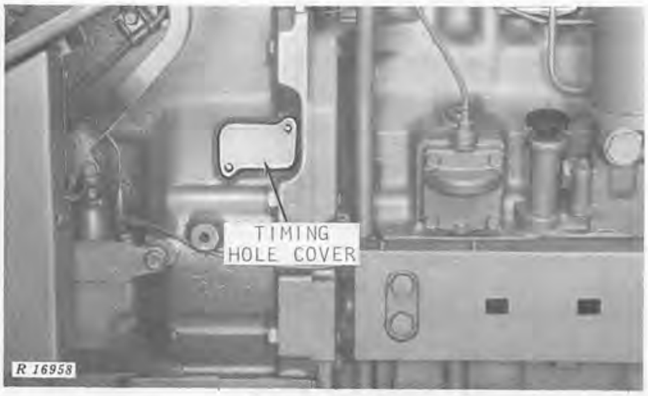
VALVE CLEARANCE

The valve clearance should be checked and adjusted, if necessary, after every 600 hours.The engine should be stopped while checking clearance but may be either hot or cold.



Leak-Off Pipes

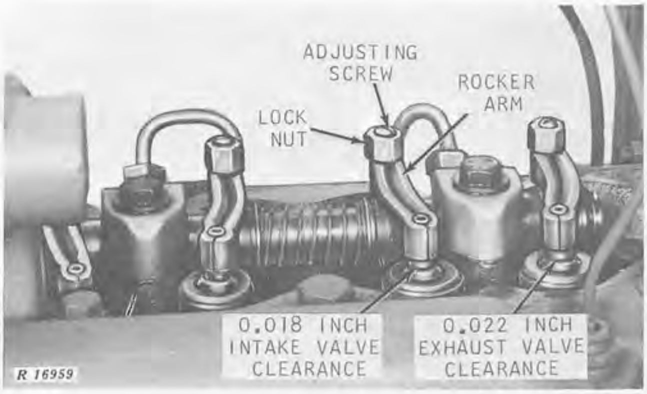
Clean the area around the valve cover and the injectors. Remove the hood (page 49), crankcase breather pipe, and the valve cover. On standard tractors, remove the operator's shield to facilitate turning the engine. On some tractors, it may be necessary to disconnect the leak-off pipe which goes to tank from the injector leak-off pipe and the pipe support. Remove the leak-off pipe from the injectors (screws have a 12-mm hex head).



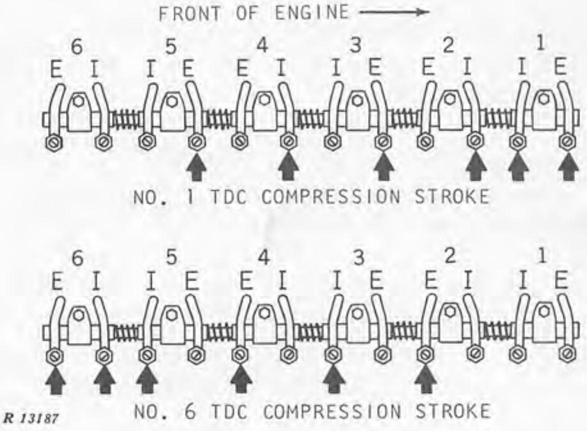
Timing Hole Cover

Open timing hole cover on right side of clutch housing. Turn the engine with a screwdriver in the running direction (counterclockwise when viewed from the rear) until the "TDC" mark on the fly wheel aligns with the reference mark at the rear of the timing hole.

All the valves can be adjusted accurately by turning the crankshaft to only two positions - "TDC" with No. 1 cylinder on the compression stroke and "TDC" with No. 6 cylinder on the compression stroke. It does not matter which valves are adjusted first.


ADJUSTING SCREW
ROCKER ARM
LOCK NUT
0.018 INCH INTAKE VALVE CLEARANCE
0.022 INCH EXHAUST VALVE CLEARANCE
R 16959

Valve Adjustment



Valve Adjusting Sequence

To determine which cylinder is at "TDC" on the compression stroke, examine the exhaust valves of Nos. 2 and 5 cylinders. If the exhaust valve of No. 2 cylinder is partially open, No. 1 cylinder is at "TDC" on the compression stroke. If the exhaust valve of No. 5 cylinder is partially open, No. 6 cylinder is at "TDC" on the compression stroke.

With No. 1 cylinder at "TDC" on the compression stroke, adjust the following valve clearances: intake valve on cylinders 1, 2, and 4 and the exhaust valve on cylinders 1, 3, and 5. These are the first, second, third, fifth, seventh, and ninth valves from the front of the engine. See the illustration for the correct valve clearance.

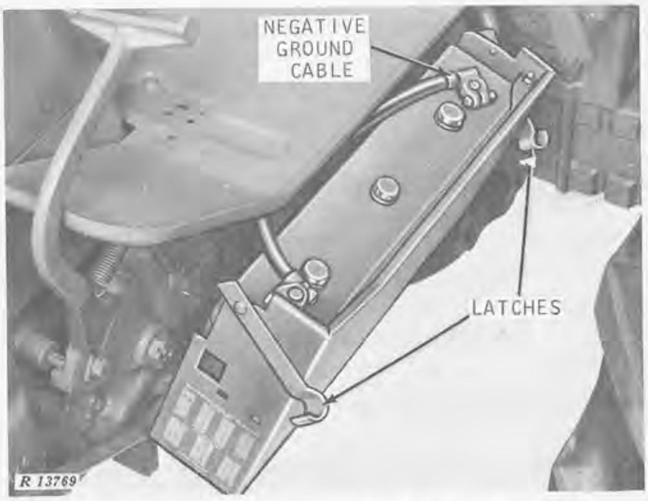
With No. 6 cylinder at "TDC" on the compression stroke, adjust the following valve clearances: intake valve on cylinders 3, 5, and 6 and the exhaust valves on cylinders 2, 4, and 6. These are the first, second, third, fifth, seventh, and ninth valves from the rear of the engine.

To adjust valve clearance, loosen the lock nut and turn the adjusting screw in or out. Recheck the clearance after tightening the lock nuts.

After all valve clearances are correct, close the timing hole cover and install parts removed.

ELECTRICAL SYSTEM

Batteries



Battery Compartment Tilted Outward

The tractor has two 6-volt batteries connected in series to furnish 12 volts for the electrical system.

On row-crop tractors the batteries are below the platform, one on each side of the tractor. To gain access to a battery on tractors without a cab, pull out and up on the latches at the front and the rear of the compartment to tilt it out as illustrated. On tractors with a cab, loosen the latch wing screw.

On standard tractors, the batteries are below the left-hand edge of the platform. Lift and turn rearward the latch at the rear of the battery cover. Lift the cover upward.

When replacing a battery use a 6-volt, 75-plate John Deere battery or its equivalent with a minimum rating of 172 ampere hours. The battery is 19-5/16 inches long, 4-11/32 inches wide and 9-3/4 inches high. Both batteries should have the same ampere-hour rating.

Dangers Connected with Batteries

Keep all sparks or open flames away from the batteries as the gas from the electrolyte is highly flammable. To avoid sparks when using booster batteries, hook them up according to the instructions on page 5. If a battery needs recharging, avoid sparks by turning off the charger before making connections or disconnections. Severe damage or burns will be caused if some parts of the electrical system are grounded or short circuited. WHEN SERVICING THE ELECTRICAL SYSTEM, DISCONNECT THE BATTERY GROUND CABLE.

Cleaning Batteries

Keep the batteries clean by wiping them off with a damp cloth at the end of every 200 hours of operation or whenever dirt appears excessive.

If corrosion is present around the terminal connections, remove it and wash the terminals with an ammonia solution or a solution consisting of 1/4 pound of baking soda added to one quart of water. Be sure the vent plugs are tight to prevent cleaning solution from entering the cells.

After cleaning, flush the outside of the battery, the battery compartment, and surrounding areas of the tractor with clear water. Examine the vent holes in each battery cap to make sure they are open.

Checking Specific Gravity

Use a battery hydrometer to check the specific gravity of the electrolyte in each battery cell. Hold the hydrometer vertical and take the reading. Correct the reading by adding four gravity points (0.004) for every ten degrees the electrolyte temperature is above 80°F. or subtracting four gravity points for every ten degrees below 80°F. A fully charged battery will have a corrected specific gravity of 1.260. Charge the battery if the reading is below 1.215.

Checking Electrolyte Level

Check the level of the electrolyte (acid and water solution) in the batteries at least every 200 hours of operation. Fill the battery cells to the bottom of the filler neck. Use distilled water. If distilled water is not available, use any clean water that is fit to drink and does not have a high mineral content.

NOTE: Since water and electrolyte will not mix immediately, do not add water in freezing weather unless the engine is to be run long enough (2 or 3 hours) to assure a thorough mixing of water and electrolyte.

Cold Weather Battery Service

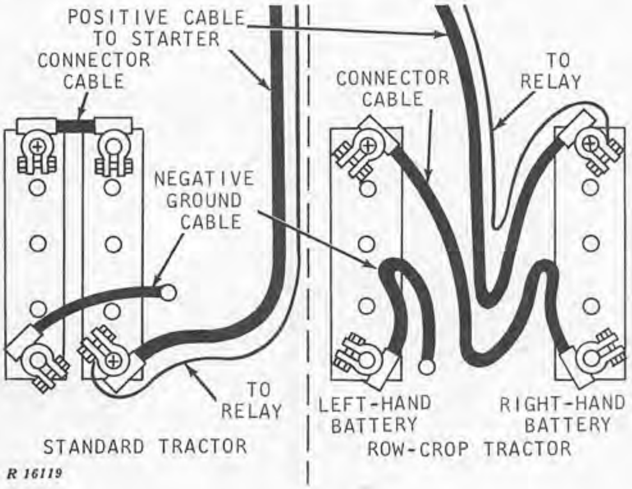
During cold weather, it is particularly important to keep the electrolyte in the batteries at the proper level, and to keep the batteries fully charged. Otherwise the batteries are apt to freeze. Freezing weather will have little damaging effect on a fully charged, properly filled battery.

Removing and Installing Batteries

Disconnect the battery ground cable from the left-hand battery first. If removing the right-hand battery, then disconnect the connector cable from the negative post of the right-hand battery. Disconnect the positive battery cable last. Remove the battery hold down clamp and lift the battery off the tractor.

When installing the battery, overtightening of the clamp may damage the battery.

Connecting Batteries



Battery Connections

Before connecting the battery, make sure all electric switches and accessories are turned off. Connect the positive battery cable first. If installing right-hand battery, connect the connector cable to the negative post before connecting the ground cable. Before connecting the battery ground cable to the left-hand battery, momentarily touch it against the negative post. With all switches and accessories off no sparks should occur. Connect the ground cable.

Tighten the clamps securely. Coat the terminals and connectors with vaseline mixed with baking soda to retard corrosion.

Storing Batteries

If the tractor is to be stored for more than 30 days, remove the batteries. With the electrolyte level at the bottom of the split ring, charge the battery before storing it. After every 30 days the battery is in storage, bring it back up to full charge. To minimize self discharge, store the battery in as cool a place as possible so long as the electrolyte does not freeze. Electrolyte at 1.220 specific gravity (corrected to 80°F.) will freeze at -31°F. At 1.260, the electrolyte will freeze at -75°F.

Alternator and Regulator

The alternator located at the right-hand front side of the engine provides electric current for charging the batteries and for other electrical requirements of the tractor. A transistorized alternator-regulator is mounted at the rear of the alternator. The regulator controls the voltage output of the alternator.

Precautions for Alternator and Regulator

When the batteries are connected, observe the precautions listed here. Failure to observe them will probably result in damage to the regulator, alternator, or both.

(1) Never attempt to polarize an alternator.

(2) Disconnect the batteries when working near or when working on the regulator or alternator.

(3) If either the regulator or alternator wiring is disconnected, be sure that it is properly connected BEFORE the batteries are connected.

(4) Some battery chargers can damage the alternator or regulator. Disconnect the battery ground cable when using these chargers.

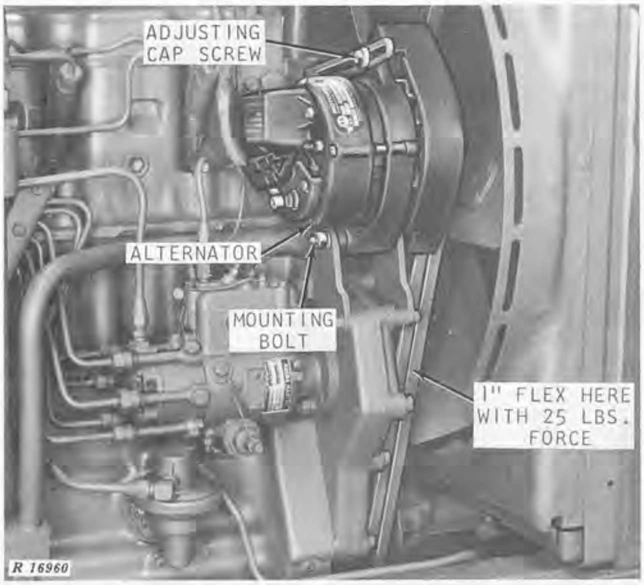
(5) The alternator field circuit between the alternator and regulator must never be grounded when the key switch is on or the engine is running.

(6) Never ground the alternator output terminal or the circuit between the alternator and the battery.

(7) The alternator must not be operated on an open circuit (batteries disconnected or with a broken or disconnected wire between the alternator and batteries). The high voltage resulting from open circuit operation may damage the alternator or regulator.

Adjusting Belt Tension

After every 200 hours of operation or whenever necessary, check the belt tension.



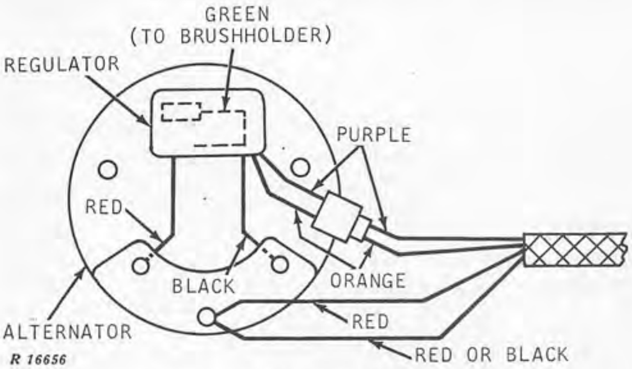
Belt Adjustment on Tractor without Air Conditioning

With the mounting bolt and adjusting cap screw loose, apply outward force to the FRONT alternator frame until a firm push (25-pound force without air conditioning, 20-pound force with air conditioning) on a belt midway between the two pulleys will deflect that belt 1 inch. Tighten the alternator in this position. Alternator may be damaged if pressure is applied to the rear alternator frame.

When a belt needs replacing, install 2 new belts. The belts must be a matched set to obtain satisfactory service life.

Alternator-Regulator Connections

If for any reason the alternator and regulator are disconnected, connect them as shown.



Alternator and Regulator Connections

Starter

The engine is cranked by a heavy-duty starter, located on the left-hand side of the engine. It is built to carry a big load for a short period of time. A solenoid switch on top of the starter makes the electrical connection between the starter and the batteries.

IMPORTANT: Never operate the starter for more than 30 seconds at a time. After 30 seconds, allow at least two minutes for the starter to cool. After a false start, be sure that the starter has stopped completely before attempting another start.

If the starter responds normally, it can usually be considered to be in good condition. However, periodic checking of the starter and its connections may be necessary.

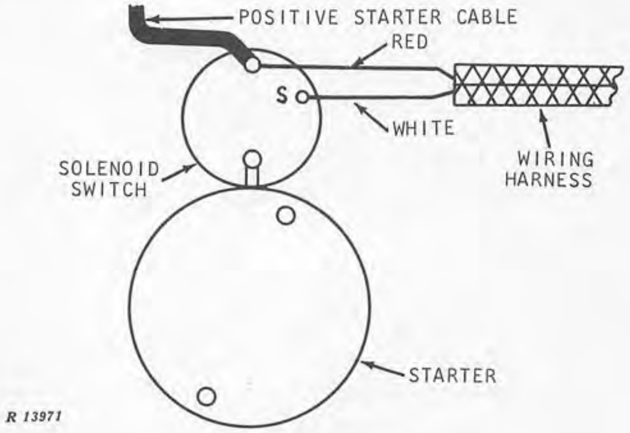
Checking Causes of Sluggish Starter

The usual causes of a sluggish starter (other than the starter) are run-down batteries, loose connections, defective wiring, or some condition in the engine that puts a heavier load on the starter. Check the batteries and the condition of the wiring. The wiring connections should be clean and tight. At low temperatures, be sure the engine crankcase oil is of the correct viscosity and quality.

See your John Deere dealer if these checks fail to improve starter performance.

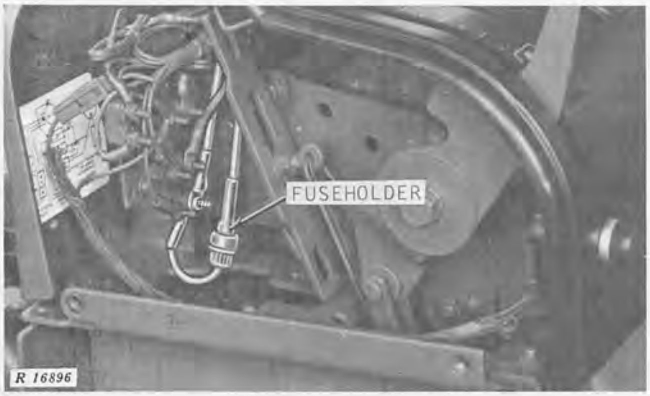
Starter-Solenoid Switch Connections

If the starter and solenoid switch wires and cables are disconnected for any reason, connect them as shown in the illustration below.



Starter Connections

Fuse



Fuseholder

The wiring for the key switch is protected by an MDL-25 fuse mounted in a fuseholder. The fuseholder is located at the circuit breaker underneath the cowl. To replace this fuse, remove the cowl, unscrew the fuseholder, and install a new fuse.

NOTE: Be sure to determine why the fuse burned out and correct the problem before installing the new fuse.

Circuit Breakers

A self-resetting 50 amp. main circuit breaker protects the main electrical system. The wiring circuits for the lights and accessories are protected by separate circuit breakers. If a lighting or accessory circuit becomes over-loaded, a circuit breaker will open preventing the lights or lighter and horn from operating.

To reset the circuit breaker, turn off the light switch (light circuits) or key switch (ignition or accessory circuits) and wait for one minute before turning the switch back on. The circuit breaker will reset itself. See your John Deere dealer if the circuit breaker fails to operate properly. Also see your dealer for instructions on connecting accessories to the electrical load center.

Lights

Sealed-Beam Lamps

The tractor has two sealed, dual-beam headlights. Sealed-beam front-mounted flood lights are available from your dealer. See page 20 for adjusting instructions.

The tractor has a combination rear lamp which consists of a sealed-beam unit to provide a bright flood light and a single-contact bulb which glows through the sealed-beam unit to provide a red taillight. See your John Deere dealer for replacement sealed-beam units.

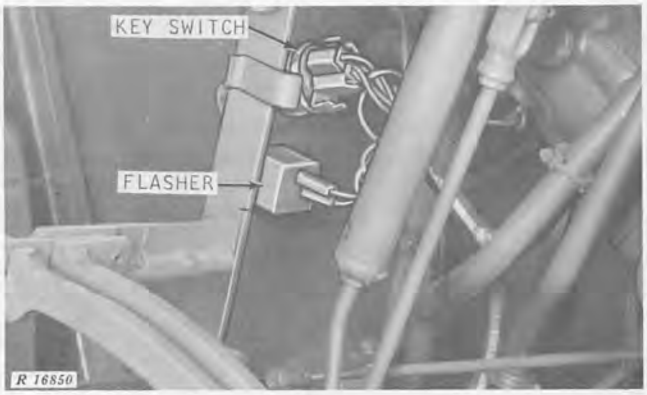
Bulbs

When red taillight does not light, replace the bulb mounted on the inside of the taillight instead of the sealed-beam unit.

The fuel gauge and the temperature gauges are illuminated by fiber optics lighting from the tachometer lamp. The tachometer lamp bulb is a wedge base bulb and is removed from its socket by pulling straight outward. Remove the tractor cowl to gain access to the tachometer lamp.

See your John Deere dealer for replacement bulbs in the taillight, flashing warning lamp, indicator lamps on the instrument panel, and tachometer lamp for instrument lighting.

Flasher



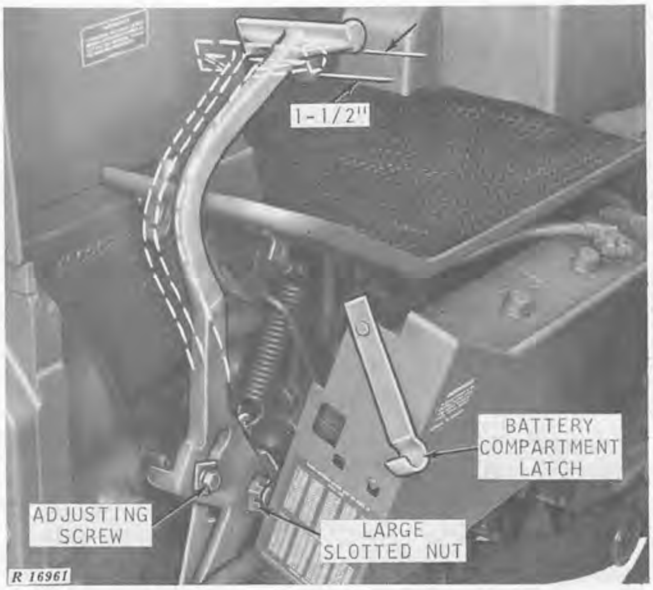
Flasher

The flasher for the flashing warning lamp is attached to the inside of the control support below the key switch. To gain access to the flasher, remove the control support cover.

NOTE: In some areas flashing lights are prohibited by local regulations. If necessary disconnect the flasher from the wiring harness and connect the AR41694 wiring lead with connector in place of the flasher. The AR41694 wiring lead is in the bag of miscellaneous parts received with the new tractor.

TRANSMISSION CLUTCH

The clutch pedal should be checked and adjusted if necessary every 200 hours of operation or whenever free travel is less than 3/4- inch.



Clutch Pedal Free Travel Adjustment

With the transmission in "PARK" and the engine running at 1900 rpm, measure the distance the clutch pedal travels before it begins to disengage the clutch. The clutch pedal free travel should be 1-1/2 inches.

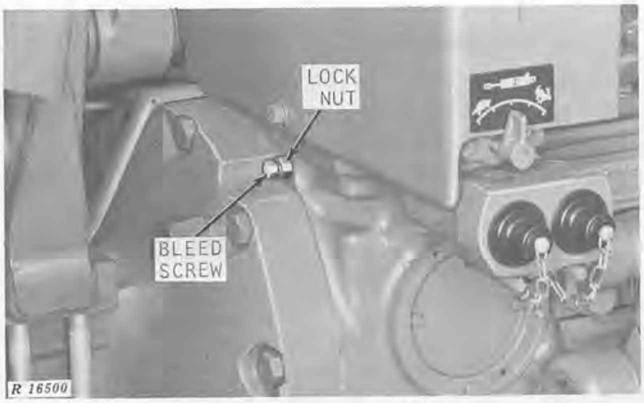
IMPORTANT: Do not operate the tractor when clutch pedal free travel is less than 3/8 inch.

If the free travel is less than 3/4 inch, tilt the battery compartment outward and loosen the clutch pedal adjusting screw. If necessary, remove the cotter pin and loosen the large slotted nut. With the transmission in "PARK" and the engine running at 1900 rpm, adjust the pedal free travel to 1-1/2 inches. Tighten the adjusting screw and the large slotted nut. Recheck the free travel to be sure it is correct. Install a new cotter pin in the large slotted nut and close the battery compartment.

On tractors with Power Front-Wheel Drive, check the clutch switch adjustment after adjusting pedal free travel. The Power Front-Wheel Drive should engage just prior to the rear wheels. To adjust the switch, loosen the switch mounting screws and move the switch.

POWER BRAKES

The power brakes should be bled after every 200 hours of operation, or whenever brake pedal travel exceeds 5-3/4 inches on the third application after the engine is stopped and the accumulator discharged.



Brake Bleed Screw and Lock Nut

To bleed the brakes, start the tractor engine and loosen the bleed screw lock nut on each side of the rear axle housing. Turn each bleed screw out two turns and tighten the lock nut. Tightening the lock nut prevents oil from leaking around the bleed screw.

Depress the brake pedals for 2 minutes to bleed air from the brake system. While holding the pedals down, loosen the bleed screw lock nuts and tighten the bleed screws. Tighten the lock nuts, release the pedals, and stop the engine.

Discharge the accumulator by pumping the pedals slowly until the pedals go all the way down.

With the accumulator discharged, depress each pedal twice. Solid pedal feel should be obtained on the next application and brake pedal travel should not exceed 5-3/4 inches. If travel is excessive, repeat the bleeding procedure. If bleeding the brakes does not correct the difficulty, consult your John Deere dealer.

ACCUMULATOR

CAUTION: Do not attempt to disconnect or remove the accumulator without first relieving the hydraulic pressure from the unit. To do so, stop engine, loosen the right-hand brake bleed screw and hold the right-hand brake pedal down,for a few minutes.

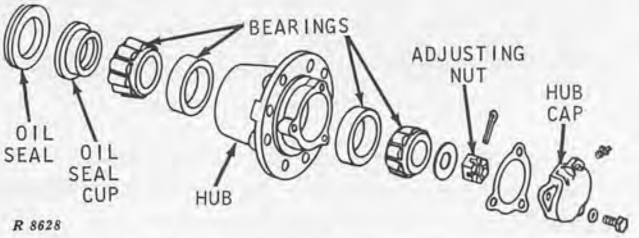
The brake accumulator will supply oil to the brakes for an emergency application immediately after the engine is stopped.

Failure of the brakes to function when the engine is stopped and the brakes properly bled could be due to the brake accumulator becoming discharged. When this occurs the accumulator must be recharged with dry nitrogen at 500 pounds per square inch pressure. See your John Deere dealer for this service.

FRONT WHEEL BEARINGS

The front wheels of your tractor are carried on roller bearings. Check the front wheels periodically for bearing end play. Clean and pack the front wheel bearings at the end of every 1200 hours of operation, or after the tractor has been operated in extremely wet and muddy conditions.

Adjusting Bearings

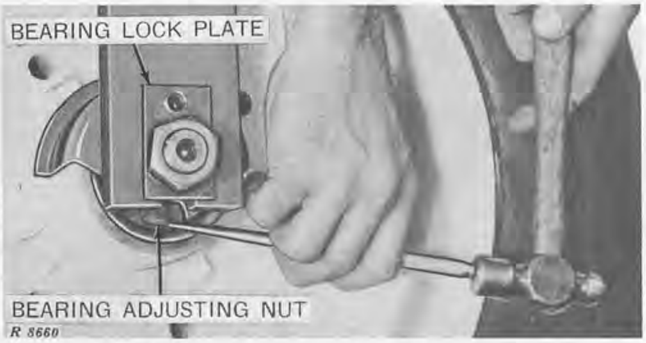


Front Wheel Bearings (Double Front Wheel, Roll-O-Matic, or Wide Front Axle)

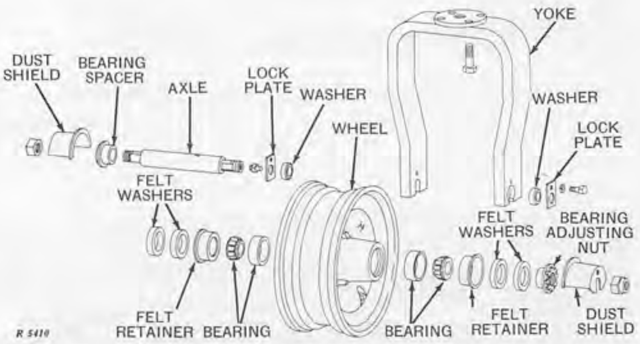
To adjust the bearings, remove the hub cap and cotter pin. Draw the adjusting nut up until a slight drag is felt when the wheel is rotated. If the adjusting nut has to be turned three or four castellations, remove the wheel and inspect the bearings.

After the adjusting nut is drawn tight, back it off to insert the cotter pin in the first hole. If one hole is aligned with a slot when the nut is tightened, back the nut off to align the second hole with the nearest slot. Both front wheels must be adjusted in the same manner.

If the tractor has a single front wheel, back off the bearing lock plate screw and the axle nut. Then tighten the bearing adjusting nut until a slight drag is felt when the wheel is rotated. Back the nut off to the closest notch and tighten the lock plate screw. Tighten the axle nut. Bend the corner of the lock plate against the axle nut.



Adjusting Single Front Wheel Bearing



Single Front Wheel

Cleaning and Packing Bearings

Disassemble and clean all parts of the hub and spindle. Inspect the bearings and replace them if they are worn. If three deep grooves are worn in the seal cup, have the oil seal and oil seal cup replaced.

Pack the bearings with wheel bearing grease. Pack the oil seal lips with SAE multipurpose-type grease. Install the wheels and adjust the front wheel bearings.

TIRES

Check the tires for air inflation (page 16) every 200 hours of operation, or whenever necessary, and inspect them for possible cuts or breaks that may expose the tire fabric. To prevent further damage, repair the cuts or breaks.

Protect the tires from exposure to oil, grease, fuel, bright sunlight, and chemicals (including those used for dusting and spraying). Careless driving over sharp objects shortens tire life.

ROLL-GARD

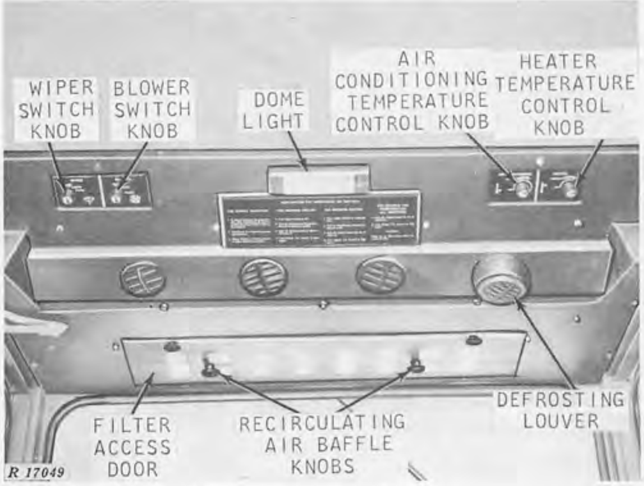
When installing a Roll-Gard, tighten the bolts with sufficient torque to hold the lower plate evenly against both axle housings. Then in a diagonal sequence, tighten the bolts to 50 ft-lbs torque. Retighten the bolts in the same sequence to 300 ft-lbs torque (60 ft-lbs torque if equipped with a cab). After a few hours service, RETIGHTEN the cap screws on tractors without a cab and keep them tight.

⚠ **CAUTION: A tractor roll-over may place a severe stress on the Roll-Gard structure. Therefore, re-use of the Roll-Gard is not recommended if its upright teams, cross-bar or attaching parts have been bent, buckled or stretched.**

Tractor Cab

CAUTION: The cab air filters are not designed to filter out harmful chemicals. When using agricultural chemicals, follow the instructions given in the implement operator's manual and those given by the chemical manufacturer.

CAB CONTROLS


WIPER SWITCH KNOB
BLOWER SWITCH KNOB
DOME LIGHT
AIR CONDITIONING TEMPERATURE CONTROL KNOB
HEATER TEMPERATURE CONTROL KNOB
FILTER ACCESS DOOR
RECIRCULATING AIR BAFFLE KNOBS
DEFROSTING LOUVER
R 17049

Air Conditioned Cab Controls

Recirculating Air Baffle

When the recirculating air baffle is moved to the left, only filtered outside air enters the blower to provide maximum pressurization of the cab. This is the normal operating position.

Loosening the knobs and moving them to the right opens the recirculating air baffle allowing the air inside the cab to recirculate and mix with a small amount of incoming outside air. In the recirculating position, the air conditioner will maintain a lower cab temperature or the heater will maintain a higher cab temperature.

The baffle may be opened to an intermediate position to mix more outside air with inside air and maintain more cab pressure.

Blower Switch

To maintain a clean atmosphere within the cab when operating the tractor, run the blower continously with the doors and windows closed. To obtain low fan speed, turn the blower switch knob clockwise to the first position. For high fan speed, turn the knob clockwise as far as it will go. Turn the knob counterclockwise to shut the fan off.

Rotate the louvers to control the direction of air flow. The right-hand louver can be adjusted to defrost the upper portion of the windshield.

Heater Temperature Control Knob

The cab may have a heater that is connected to the tractor engine cooling system. Coolant flow through the heater core is controlled by the heater temperature control knob. Adjust the volume of air flow with the blower switch control knob.

To obtain maximum heat, turn the heater control knob all the way clockwise. Turn the knob counterclockwise to reduce the temperature. Turning the knob all the way counterclockwise shuts the heater off.

Air Conditioning Temperature Control Knob

On cabs with air conditioning, the air conditioning temperature control knob turns the air conditioning system on and controls the cooling temperature in the cab. For maximum cooling, turn the knob all the way clockwise. For less cooling, turn the knob counterclockwise.

Wiper Switch

To obtain low wiper speed, turn the knob clockwise to the first position. For fast wiper speed, turn the knob all the way clockwise. The wiper blade returns to a park position when the switch is turned counterclockwise to the off position.

Cab Windows

When it is desired to operate the tractor with the cab windows open, take the necessary precaution to prevent damage to windows from rear mounted implements, other mounted equipment or from driving too close to some object.

AIR CONDITIONING OPERATION

Normal Cooling

Under normal conditions, move the air baffle control knob to the left for outside air. Turn the blower switch all the way clockwise for maximum blower speed and regulate the cab temperature by turning the temperature control knob.

Maximum Cooling

For high humidity, high temperature operating conditions, maximum cooling can be obtained by moving the air baffle control knob to the right to recirculate the air in the cab.

Humidity Control

Turning the heater on when operating the air conditioner may help control humidity. However, under normal conditions the heater temperature knob should be turned off when operating the air conditioner.

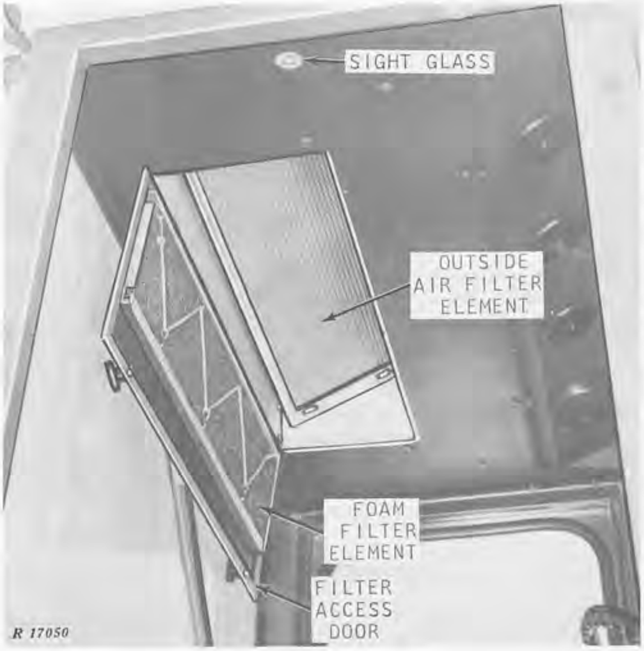
The blower switch must be turned on before the air conditioning system will operate.

CAB SERVICE

Filter Element

The cab has a dry-type pleated element to filter the outside air. The cab also has a foam filter for recirculated air. Service the filters whenever the engine air cleaner filter is serviced or whenever air flow is noticeably reduced. To service the filters loosen the knobs and open the filter access door. Remove the filter. See page 41 for dry element filter service instructions. The foam filter may be washed or cleaned with compressed air.

A clogged air intake screen at the front of the cab will also reduce the air flow.



Filter Element

Evaporator Drain Tube Trap

If water is not draining from the evaporator properly, check the evaporator drain tube trap for clogging or for a dry trap. If the water has evaporated from the trap, air will be sucked up the drain tube and hold the condensate water in the evaporator housing. At the beginning of an air conditioning season it may be necessary to prime a dry trap. Hold a garden hose against the lower end of the drain tube momentarily to fill the trap with water.

Head Liner

Remove dust accumulations from the foam head liner with a vacuum cleaner. Washing the head liner will cake dust into the liner and make it less effective in reducing noise.

Circuit Breakers

The air conditioned cab electrical system has one 30-amp and two 20-amp circuit breakers at the electrical load center under the cowl. Two 15-amp circuit breakers are mounted inside the console near the blower switch. Two 15-amp circuit breakers are mounted near the condenser.

A cab without air conditioning has two 20-amp circuit breakers at the electrical load center under the tractor cowl. Two 15-amp circuit breakers are mounted inside the console near the blower switch.

The windshield wiper is protected by a 5-amp circuit breaker on the wiper switch.

The circuit breakers are reset by turning the key switch off for a minute.

Windshield Wiper Park Adjustment

When the wiper is shut off, the blade completes a stroke and then stops. This park position is adjustable. Remove the panel with the filter access door to gain access to the wiper motor. Loosen the top two of the three screws retaining the round cover on the wiper motor gear housing. Then turn the nylon hex in the center hole of the cover clockwise. (RET.) to retard the time when the blade stops or counterclockwise (ADV.) to stop the blade sooner. Tighten the cover screws after adjustment.

Bleeding Heater

Running the engine at fast idle speed will usually circulate coolant through the heater to remove the trapped air from the heater whenever the cooling system is drained or refilled.

Heater Core

Use antifreeze in the engine cooling system to prevent freezing of coolant trapped in the heater core.

Air Conditioner Condenser and Evaporator

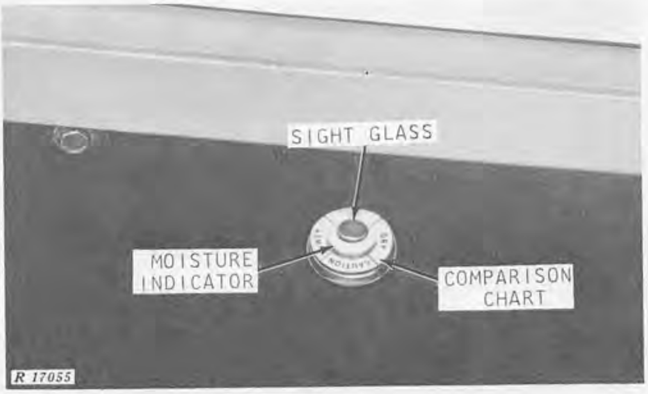
A decrease in air conditioner efficiency may be due to a clogged evaporator core, condenser core or condenser air intake screen. To gain access to the evaporator core, open the filter access door. Remove the condenser housing cover for the condenser core. Clean the core with compressed air or with water. Do not direct the stream of water at the electrical components.

Sight Glass

A sight glass, located at the left edge of the console, is used to determine if the air conditioning system has sufficient quantity of refrigerant.

The sight glass also has a moisture indicator that changes color when moisture is present. Service the air conditioning system when moisture indicator color duplicates the WET color in the comparison chart.

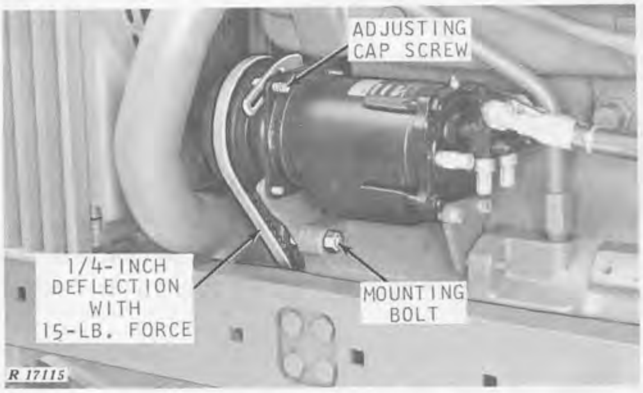
The sight glass should be clear before starting the engine. Run the engine at 1900 rpm. Turn the blower on high speed and the temperature control knob to the coldest temperature. Bubbles will appear in the sight glass for a few minutes after starting the engine. At temperatures above 70 degrees farenheit, the bubbles will disappear and the sight glass should be clear.



Sight Glass

If the bubbles do not stop flowing or if there is moisture present see your John Deere dealer.

Compressor Belt Adjustment



Compressor Belt Adjustment

Whenever necessary, adjust the compressor drive belt. Loosen the compressor mounting bolt and adjusting cap screw. Apply an outward force to the compressor so that a 15-pound force on the belt midway between the compressor and crankshaft pulleys will deflect the belt 1/4-inch. Tighten the compressor in this position.

Tractor Storage

If your tractor is to be put in storage for several months, the suggestions for storing it and removing it from storage on this page will help to prevent excessive deterioration.

STORING THE TRACTOR

Use the AR41785 Engine Storage Kit and an extra quart of AR41870 Internal Corrosion Inhibitor or its equivalent when storing the tractor.

Used engine crankcase oil will not protect bearings and other surface from rusting or corroding during the storage period. Therefore, change the engine crankcase oil before storing the tractor. With the engine warm, drain the engine crankcase, replace the filter element, and fill the crankcase with new oil of the proper viscosity and service (page 38).

Service the air cleaner. See page 41.

Drain, flush, and fill the cooling system. Use clean soft water and John Deere T19566T Summer Coolant Conditioner or, if freezing weather is anticipated, add enough antifreeze to protect the cooling system from freezing.

Add 7 ounces of corrosion inhibitor from the storage kit to the transmission-hydraulic system.

Run engine at slow idle to circulate the coolant with the thermostat open. Cycle all hydraulic functions (including steering and brakes) to distribute the inhibitor to all hydraulic components.

Drain the fuel tank and add 11 ounces of inhibitor to the fuel tank.

Add 16 ounces of inhibitor to the engine crankcase.

Disconnect the turbocharger to air intake manifold intake pipe. Place 3 ounces of inhibitor in the manifold. Align the air intake pipe with the manifold and the turbocharger; then tighten the clamps. (This prevents distortion of the turbocharger.) Turn the engine slowly for two revolutions.

Loosen the fan belts. If present, loosen the air conditioner compressor belt.

Remove, clean, and store the batteries as instructed on page 56.

Seal the following tractor openings with the plastic bags and tape from the kit and use the check list on the tag: air cleaner air inlet, exhaust muffler, crankcase breather tube, fuel tank ventilated cap, radiator overflow hose, and the transmission hydraulic filler cap and breather.

Coat with a grease or corrosion preventative the exposed metal surfaces such as axles and piston rods of hydraulic cylinders.

Raise the tires so they do not touch the ground and protect them from heat and sunlight.

When long term storage is anticipated, block the clutch pedal in the disengaged position.

Clean the exterior of the tractor, removing all mud, dirt, grease, and other foreign material. To prevent rust, touch up the painted surfaces where they may have been scratched or chipped.

Store the tractor in a dry protected place. If it is necessary to store the tractor outside, always cover it with a water proof canvas or other suitable protective material to protect the switches, instruments, tires, and other tractor components.

REMOVING THE TRACTOR FROM STORAGE

Use the following procedure to remove your tractor from storage and place it in service.

Remove all protective coverings from the tractor. Check the tries to be sure they are properly inflated and then remove the blocking from the tractor.

Unseal all openings in the engine, electrical system, and transmission-hydraulic system. Follow the check list provided on the tag with the AR41785 kit.

It Hurts to get HURT!
BENTON

R 2235

Remove the batteries from storage. Install them on the tractor and connect the cables (page 56). Adjust the alternator belt tension (page 56). Adjust compressor belt tension (page 63).

Check the engine and the transmission-hydraulic system oil level. Add oil if necessary (pages 43 and 45). Check radiator coolant level (page 52).

Fill the fuel tank.

To help maintain the power and efficiency of your tractor, perform the recommended 600-hour service (page 46).

Disconnect the electrical shut-off wire from the injection pump and crank the engine with the starter until the engine oil pressure indicator goes out. Do not operate the starter for more than 30 seconds at a time. After the indicator light goes out, reconnect the injection pump electrical shut-off solenoid wire and start the engine.

Operate the engine for a few minutes at slow idle to make certain the tractor is in proper condition before operating under load.

R 2272

⚠ **CAUTION: Do not lubricate or adjust the tractor while engine is running unless specifically recommended.**

Trouble Shooting

If your tractor shows a particular difficulty, check the symptoms listed on the following pages. Possible causes and remedies are given for each symptom. If the trouble is not corrected after eliminating these possible causes or remedies, consult your John Deere dealer.

ENGINE

Symptom	Possible Cause	Possible Remedy	Page Reference
Engine hard to start or will not start.	No fuel.	Fill tank with proper fuel.	37
	Fuel shut-off valve closed.	Open valve.	50
	Low air temperature.	Use a cold-weather starting aid.	4
	Low battery output.	Check electrolyte level and specific gravity of each battery.	55
	Excessive resistance in starting circuit.	Clean and tighten all connections on batteries and starter.	56
	Crankcase oil too heavy.	Drain and fill crankcase with oil of proper viscosity and quality.	38
	Improper type of fuel.	Consult fuel supplier and use proper type of fuel for operating conditions.	37
	Water, dirt, or air in fuel system.	Drain, flush, fill, and bleed system.	50
	Clogged fuel filter.	Replace filter element and bleed system.	51
	Dirty or faulty injectors.	Have your John Deere dealer check the injectors.	51
Engine knocks.	Insufficient oil.	Call your dealer.	43
	Low coolant temperature.	See "Below normal engine temperature."	68

ENGINE—Continued

Symptom	Possible Cause	Possible Remedy	Page Reference
Engine knocks—continued.	Injection pump out of time.	Make sure injection pump is timed properly. See your John Deere dealer for this service.	. .
Engine runs irregularly or stalls frequently.	Low coolant temperature.	If water temperature gauge is not in normal range, see "Below normal engine temperature."	68
	Clogged fuel filter.	Replace filter element and bleed system.	51
	Water, dirt, or air in fuel system.	Drain, flush, fill, and bleed system.	50
	Dirty or faulty injectors.	Have your John Deere dealer check the injectors.	51
Lack of engine power.	Engine overloaded.	Reduce load or shift to lower gear.	. .
	Intake air restriction.	Service air cleaner.	41
	Clogged fuel filter.	Replace filter element and bleed system.	51
	Improper hitching of equipment.	See equipment operator's manual for proper hitching.	. .
	Improper type of fuel.	Consult fuel supplier and use proper type of fuel for operating conditions.	37
	Overheated engine.	See "Engine overheats."	68
	Improper ballast.	Adjust ballast to load.	17
	Below normal engine temperature.	Remove and check thermostat.	52
	Improper valve clearance.	Check clearance and adjust if necessary.	54
	Dirty or faulty injectors.	Have your John Deere dealer check the injectors.	51
	Injection pump out of time.	See your John Deere dealer.	. .
	Turbocharger not functioning.	See your John Deere dealer.	. .

ENGINE—Continued

Symptom	Possible Cause	Possible Remedy	Page Reference
Engine overheats.	Engine overloaded.	Shift to lower gear or reduce load.	. .
	Low coolant level.	Fill radiator with coolant to the proper level. Check for leaks or loose connections.	43
	Dirty cooling system radiator core, oil cooler, or side grille screens.	Remove all foreign matter from exterior of radiator core, oil cooler, and grille screens.	53
	Defective thermostats.	Remove and check thermostats.	52
	Loose or defective fan belt.	Adjust belt tension. Replace worn belts.	56
	Cooling system needs flushing.	Drain and flush cooling system.	52
	Defective temperature gauge.	Check and replace gauge if necessary.	. .
Below normal engine temperature.	Defective thermostats.	Remove and check thermostats.	52
Low oil pressure.	Low oil level.	Check crankcase oil level on dipstick and add oil if necessary.	43
	Improper type of oil.	Drain and fill crankcase with oil of the proper viscosity and quality.	38
High oil consumption.	Crankcase oil too light.	Drain and fill crankcase with oil of the proper viscosity and quality.	38
	Oil leaks.	Check for leaks in lines and around gaskets and drain plugs.	. .
High fuel consumption.	Improper type of fuel.	Consult your fuel supplier and use proper fuel.	39
	Engine overloaded.	Reduce load or shift to lower gear.	. .
	Clogged or dirty air cleaner.	Service air cleaner.	41
	Improper hitching of equipment.	See equipment operator's manual for proper hitching.	. .
	Improper valve clearance.	Check and adjust if necessary.	54
	Dirty or faulty injectors.	Have your John Deere dealer check the injectors.	. .
	Engine out of time.	Have your John Deere dealer check the injection pump timing.	. .

ENGINE—Continued

Symptom	Possible Cause	Possible Remedy	Page Reference
Engine emits black or gray exhaust smoke.	Improper type of fuel.	Consult your fuel supplier and use proper type fuel for operating conditions.	37
	Engine overloaded.	Reduce load or shift to a lower gear.	. .
	Clogged or dirty air cleaner.	Service air cleaner.	41
	Defective muffler.	Check the muffler for possible damage which might create back pressure.	. .
	Dirty or faulty injectors.	Have your John Deere dealer check the injectors.	51
	Engine out of time.	Make sure injection pump is timed properly. See your John Deere dealer for this service.	. .
	Turbocharger not functioning.	See your dealer.	. .
Engine emits white smoke.	Improper type of fuel.	Consult fuel supplier and use proper type of fuel for operating conditions.	37
	Cold engine.	Warm engine up to normal operating temperature.	. .
	Defective thermostats.	Remove and check thermostats.	52
	Engine out of time.	Make sure injection pump is timed properly. See your John Deere dealer for this service.	. .

ALTERNATOR, REGULATOR, AND BATTERIES

Symptom	Possible Cause	Possible Remedy	Page Reference
Batteries will not charge.	Loose or corroded connections.	Clean and tighten battery connections.	56
	Sulfated or worn-out batteries.	Check specific gravity and electrolyte level of each battery.	55
	Loose or defective fan belt.	Adjust belts. Replace worn belts.	56

STARTER

Symptom	Possible Cause	Possible Remedy	Page Reference
Starter inoperative.	Loose or corroded connections.	Clean and tighten loose connections.	56
	Low battery output.	Check specific gravity and electrolyte level of each battery.	55
	Tractor in gear.	Place shift lever in neutral.	9
Starter cranks slowly.	Low battery output.	Check specific gravity and electrolyte level of each battery.	55
	Crankcase oil too heavy.	Drain and fill crankcase with oil of proper viscosity and quality.	38
	Loose or corroded connections.	Clean and tighten loose connections.	56

TRANSMISSION

Symptom	Possible Cause	Possible Remedy	Page Reference
Oil overheats.	Low oil supply.	Fill system with proper oil.	45
	Oil cooler air passages clogged.	Clean oil cooler.	53
	Manual bypass valve open.	Close valve.	30
	Clogged filter element.	Replace filter element.	47

HYDRAULIC SYSTEM

Symptom	Possible Cause	Possible Remedy	Page Reference
Entire hydraulic system fails to function.	Low oil supply.	Fill system with proper oil to mark on dipstick.	45
	Clogged filter.	Replace filter.	47
	Hydraulic pump shut-off screw turned in too far.	Back screw out to internal stop.	5
	Possible dirt in hydraulic pump.	Shut pump off and turn it on. Check filters for clogging.	48
Oil overheats.	Low oil supply.	Fill system with proper oil to mark on dipstick.	45
	Oil cooler air passages clogged.	Clean oil cooler.	53
	Clogged filter.	Replace filter.	47
	Manual bypass valve open.	Close valve.	30

ROCKSHAFT AND 3-POINT HITCH

Symptom	Possible Cause	Possible Remedy	Page Reference
Insufficient transport clearance.	Center link too long.	Adjust center link.	24
	Lift links too long.	Adjust lift links.	25
	Implement not level.	Level implement by adjusting lift links.	25
	Implement improperly adjusted.	See implement operator's manual.	. .
Hitch fails to lift.	Excessive load on hitch.	Adjust auxiliary springs on implement or reduce load.	. .
	Negative stop screw adjustment incorrect ("L" selector lever position).	Adjust stop screw.	22
Hitch drops slowly.	Rockshaft speed-of-drop valve not set properly.	Adjust speed-of-drop.	22
Hitch too active.	Selector lever in wrong position.	Place selector lever in "LD" position.	22
No hitch response to draft load.	Selector lever in wrong position.	Place selector lever in "LD" or "L" position.	22
Insufficient hitch response.	Rockshaft speed-of-drop too slow.	Adjust speed-of-drop.	22

REMOTE HYDRAULIC CYLINDERS

Symptom	Possible Cause	Possible Remedy	Page Reference
Remote cylinder will not lift load.	Excessive load.	Adjust auxiliary springs on implement or reduce load.	. .
	Breakaway coupling lever not completely turned to unseat balls.	Attach hoses to coupling correctly.	30
Remote cylinder rate of travel too slow or too fast.	Incorrect flow control valve setting.	Adjust rate of operation.	30
No float position (left-hand coupler).	Control rod in upper hole on lever.	Move control rod to lower hole on lever.	29
Direction of remote cylinder travel is reversed.	Improper hose connections.	Reverse hose connections.	30

BRAKES

Symptom	Possible Cause	Possible Remedy	Page Reference
Pedal bounces.	Air in system.	Bleed brakes.	59
No manual brakes.	Air in system.	Bleed brakes.	59
	Bleed screws left open.	Bleed brakes and tighten bleed screws.	59
	Accumulator discharged.	See your John Deere dealer.	59

TRACTOR CAB

Symptom	Possible Cause	Possible Remedy	Page Reference
Blower not keeping dust out of cab.	Baffle in recirculating air position.	Place in outside air position.	61
	Defective filter.	Replace filter.	62
	Excessive air leak in cab.	Seal air leaks.	. .
	Blower air flow too low.	See "Blower air flow too low."	72
Blower air flow too low.	Clogged filter or air intake screen.	Clean.	62
	Heater core or evaporator core clogged.	Clean.	63
Heater will not shut off.	Heater hoses connected improperly.	See your dealer.	. .
Heater will not heat.	Air trapped in heater core.	Bleed the heater.	63
	Defective thermostat in engine.	Replace thermostat.	52
	Air conditioner turned on.	Turn off air conditioner.	61
Air conditioner not cooling.	Blower air flow too low.	See "Blower air flow too low."	72
	Compressor belt slipping.	Check belt tension.	63
	Lack of refrigerant in conditioner.	Check sight glass.	63
	Evaporator core clogged.	Clean.	63
	Condenser core clogged.	Clean.	63
	Heater turned on.	Turn off heater.	61
	Condenser air intake screen clogged.	Clean.	63
	Compressor not running.	See "Compressor not running."	72
Compressor not running.	Condenser fans not running.	Check fans.	. .
	Condenser core or intake screen clogged.	Clean.	63
Water leaking from console	Plugged drain hoses or traps.	Clean.	62
	Drain trap dry.	Prime trap.	62

Specifications

HORSEPOWER:*

Observed at PTO	115 hp.

ENGINE:

Type	6-cylinder, in-line, valve-in-head, diesel, turbocharged
Engine Speeds:	
Slow idle	800 rpm
Working range	1500 to 2200 rpm
Maximum transport speed	2500 rpm
Bore and stroke	4-1/4 in. x 4-3/4 in.
Displacement	404 cu. in.
Compression ratio	15.7 to 1
Firing order	1-5-3-6-2-4
Valve clearance	In.-0.018 in. Ex.-0.022 in.
Injection pump timing	TDC

LUBRICATION SYSTEM:

LUBRICATION SYSTEM:	Force-feed pressurized with full-flow oil filter

FUEL SYSTEM:

Type	Direct injection
Injection pump type	Inlet metering, distributing type
Air cleaner	Dry type

COOLING SYSTEM:

Type	Pressurized with centrifugal pump
Temperature control	Heavy-duty thermostats

CAPACITIES:

Fuel tank	44 U.S. gals.
Cooling system	28 U.S. qts.
Crankcase (with filter change)	16 U.S. qts.
Transmission-hydraulic system	14 U.S. gals.
With power Front-Wheel Drive	18-1/2 U.S. gals. (Approx.)

TRANSMISSION:

Type	Syncro-Range, constant mesh
Clutch	Heavy-duty, 13-1/2 in. plate, foot operated
Gear selections	8 forward and 2 reverse
Shifting	4 stations, synchronized shifting to forward gears within stations

POWER TAKE-OFF:

Type	Independent rear PTO controlled by hand-operated clutch lever
Clutch	One dry-disk, hydraulically actuated
Speed (1900 engine rpm)	Single speed—1000 rpm Dual speed—540 rpm or 1000 rpm
PTO ahead of drawbar hitch point	14 in. (540 rpm) or 16 in. (1000 rpm)

POWER FRONT-WHEEL DRIVE:

Type	Hydraulic motor driven with planetary gear reduction in wheel hub, uses pressure oil from hydraulic system
Torque	Low (series connected) and high (parallel connected)
Controls	Solenoid-operated control valves, synchronized with transmission controls

HYDRAULIC SYSTEM:

Type	Closed center, constant pressure. Includes power steering, power brakes, implement control, and transmission and differential lubrication.
Standby pressure	2250 psi

* *Factory observed at 2200 engine rpm.*

BRAKES . . . . Hydraulically power actuated, disk-type operating in oil

ELECTRICAL SYSTEM:
Type . . . . 12-volt, negative grounded
Batteries . . . Two, 6-volt, 75-plate 172-ampere-hour, 3 EH type, connected in series
Alternator . . . . 12-volt, 55-amp, with integral transistorized regulator

FRONT TIRES* 7.50-15, 6-ply

REAR TIRES* 20.8-34, 6-ply

FRONT WHEEL TREAD . . . . 50.8 to 79.9 in.

REAR WHEEL TREAD:
18.4-38 tire, regular axle . . . . 60 to 91 in.

GROUND SPEEDS . . . . See page 9

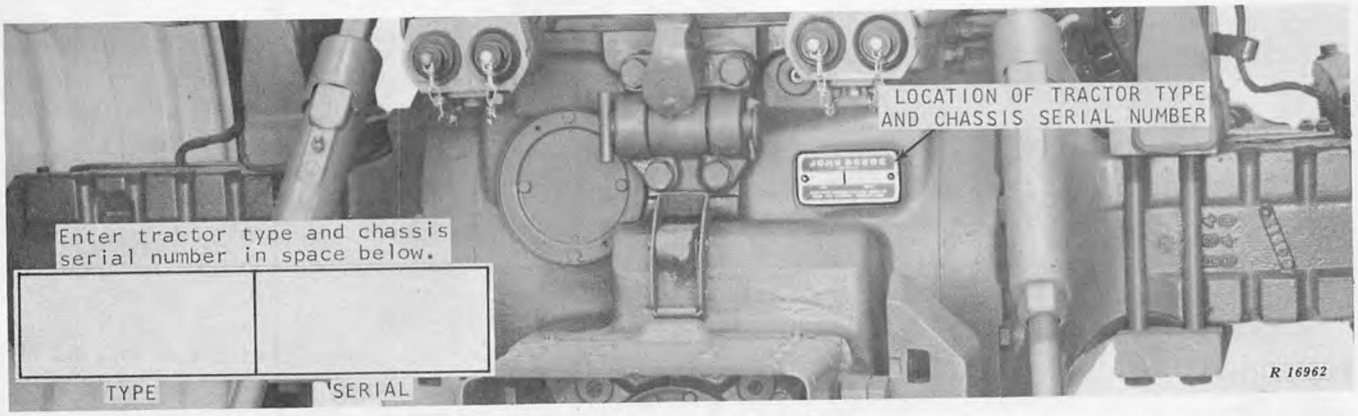
DIMENSIONS:
Wheel base . . . . 106.5 in.
Over-all length . . . . 159.3 in.
Over-all height . . . . 107 in.
Height to steering wheel . . . . 81.4 in.
Over-all width . . . . 89.6 in.
Turning radius . . . . 151 in.

TRACTOR CAB:
Blower capacity . . . . 560 cfm
Heater capacity . . . . 22,000 btu/hr
Exterior width . . . . At roof—50.1 in.
At fender—67.4 in.
Exterior cab height . . . . To roof—105.2 in.
To condenser housing—112.9 in.

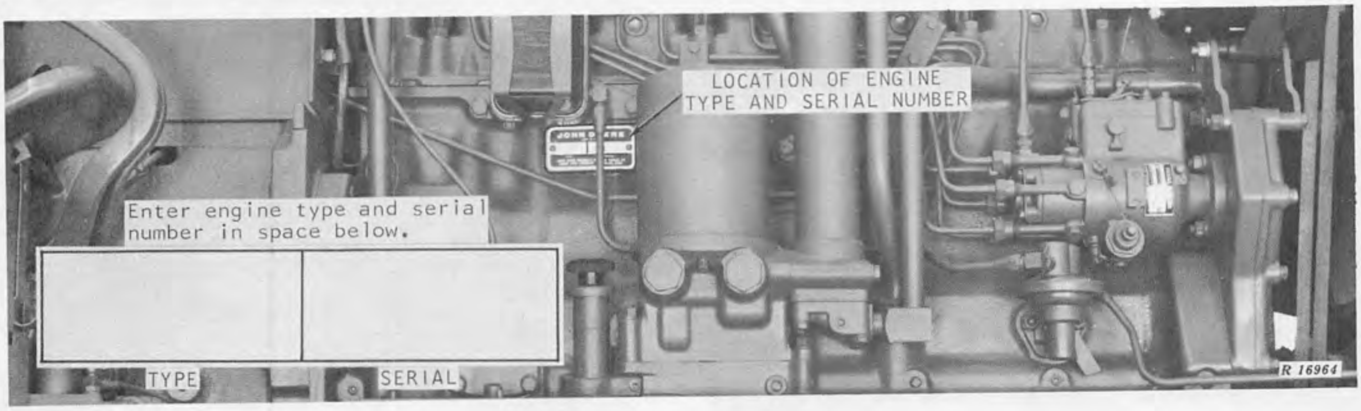
SHIPPING WEIGHT (With equipment for average field service, less fuel and ballast). Add 385 lbs. if equipped with Roll-Gard. Add approximately 1000 lbs. if equipped with Power Front-Wheel Drive.
Row-Crop . . . . 9,050 lbs.
Standard . . . . 9,070 lbs.

* *Additional tire sizes available.*

(Specifications and design subject to change without notice.)


LOCATION OF TRACTOR TYPE AND CHASSIS SERIAL NUMBER

Enter tractor type and chassis serial number in space below.


LOCATION OF ENGINE TYPE AND SERIAL NUMBER

Enter engine type and serial number in space below.

Index

A

Page

Accumulator 46, 59
Adapter, cold weather starting fluid 4
Air cleaner 41
Air cleaner indicator light 2, 41
Air conditioned cab 61
Alternator 56
Alternator indicator light 2, 3
Antifreeze 53

B

Ballast 17
Batteries 5, 55
Belt, fan 56
Bleeding brakes 59
Bleeding fuel system 51
Bleeding remote hydraulic cylinder 30
Blocks, sway 23
Brakes 12, 59, 72
Breakaway couplers 30, 31
Breaker, circuit 58, 62
Breaking in engine 7, 39
Bulbs 58

C

Cab, tractor 61
Calcium chloride weight 18
Center link 24, 25
Circuit breaker 58, 62
Clevis, drawbar 32
Clutch lever, power take-off 33
Clutch pedal 9, 59
Cold weather service 53
Cold weather starting aids 4
Control systems, implement 21
Coolant heater 5
Cooler, engine oil 53
Cooler, hydraulic oil 53
Cooling system service 52
Condenser 63
Coupler, Quik 25
Couplers, breakaway 30, 31
Cowl 49
Crankcase oil heater 5
Cylinder, remote hydraulic 29-31

D

Page

Dealer service 49
"Depth" control 21
Differential lock 11
Double rear wheels 15
Draft links 24
Drawbar 32
Drawbar pivot pin 32
Driving at night 20
Dual-beam headlights 19

E

Electrical outlet socket 20
Electrical system service 55
Electrolyte level 55
Engine break-in 7, 39
Engine difficulties 66-69
Engine idling 6
Engine speeds 6, 47
Engine starting 3, 66
Ether starting aid 4

F

Fenders 19
Flasher 19, 58
"Float" adjustment, implement hitch 25
"Float" adjustment, remote cylinder 29
Foot throttle 7
Front weight 18
Front wheel bearings 44, 60
Front wheel drive, power 11, 48
Front wheel toe-in 13
Front wheel tread width 12
Fuel 37
Fuel filter 51
Fuel gauge 2
Fuel injectors 51
Fuel pump 50
Fuel shut-off valve 50
Fuel system service 50
Fuel tank 37, 50

Page

G

Greases ... 38
Grille screen ... 49, 53
Ground speeds ... 9
Guard, PTO ... 33
Guard retainer, PTO ... 33

H

Hand throttle ... 2, 3, 6
Headlights ... 19
Heater, crankcase oil ... 5
Heater, tractor cab ... 61
Highway driving ... 20
Hitch, implement ... 21-26, 46
Hitch, Power Weight-Transfer ... 27, 28
Hood ... 49
Hoses, remote hydraulic cylinder ... 30, 31
Hydraulic pump ... 5, 48
Hydraulic system ... 21, 45, 53

I

Idling engine ... 6
Implement hitch and control systems ... 21
Implement warning lamp ... 20
Indicator lamps ... 2, 3
Inflation charts ... 16
Injection pump ... 49, 50
Injectors, fuel ... 51
Instrument lighting ... 58
Instruments ... 2

K

Key switch ... 2, 3

L

Lamps, sealed-beam ... 58
Leveling implement ... 25
Lever, breakaway coupler ... 30, 31
Lever, rockshaft selector ... 22
Lift links ... 25
Lights ... 19
Light switch ... 20
Liquid wheel weight ... 18
"Load" control ... 21
"Load-and-Depth" control ... 21
Lubricants ... 38
Lubrication:
  Axle, front ... 44
  Bearings, front wheel ... 44, 47

Page

Lubrication (Continued)
  Bearings, rear axle ... 44, 47
  Charts ... 39-41
  Engine crankcase ... 43, 45, 48
  PTO clutch ... 44
  3-point hitch ... 46
  Transmission-hydraulic system ... 45, 47, 48
  Wide-swing drawbar ... 44
Lubrication, periodic:
  As required ... 41
  Daily or 10-hour ... 43
  50-hour ... 44
  100-hour ... 45
  200-hour ... 45
  600-hour ... 46
  1200-hour ... 47
  Seasonal ... 48

M-N

Manual bypass valve ... 30, 70
Master shield ... 33
Negative stop screw ... 22
Night driving ... 22

O

Oil cooler, engine ... 53
Oil cooler, hydraulic ... 53
Oil, lubricating ... 38
Oil pressure indicator lamp ... 2, 3

P-Q

Parking tractor ... 10
Periodic service ... 39
Piston stroke, remote hydraulic cylinder ... 31
Power brakes ... 2, 12, 59, 72
Power front wheel drive ... 11, 48
Power take-off ... 33
Power take-off clutch ... 33, 44
Power take-off clutch lever ... 33
Power Weight-Transfer Hitch ... 27, 28
PTO-driven implement ... 34
PTO guard ... 33
Quik-Coupler ... 25

R

Rack and pinion adjustment, rear wheel ... 13
Radiator ... 43, 53
Rate or operation, remote hydraulic
  cylinder ... 30

Page

Rear axle 13, 44, 47
Rear PTO 33
Rear wheel tread width 13
Regulator 56
Remote cylinder 29-31, 71
Remote cylinder, bleeding 30
Remote cylinder hoses 30, 31
Remote cylinder operating levers 29
Retainer, PTO guard 33
Rim position on wheel 14
Rockshaft 21, 71
Rockshaft control lever 2, 21
Rockshaft selector lever 22
Roll-Gard 8, 60

S

Safety rules 35, 36
Screen, side grille 49, 53
Sealed-beam lamps 58
Seasonal service 48
Seat 8
Seat belt 8
Service 49
Service, periodic:
  Accumulator 46
  Air cleaner 41
  Batteries 4
  Brakes 46
  Clutch pedal 45
  Cooling system 43, 48
  Engine speeds 47
  Fuel filters 43
  Fuel injectors 43
  Fuel tank 46
  Hydraulic system 45, 47, 48
  Injection pump 46
  Tires 46
  Valves, intake and exhaust 46
Service, dealer 49
Shield, master 33
Shield, side 49
Shift lever, Syncro-Range 9
Shift quadrant 9, 10
Shifting transmission 9, 10
Socket, electrical outlet 20
Solenoid switch 57
Specific gravity test 55
Specifications 73
Specifications, fuel 37
Specifications, lubricant 38
Speed-hour meter 9, 39
Speed indicator knob 2, 9

Page

Speed-of-drop, rockshaft 22
Speeds, engine 6, 47
Speeds, ground 9
Starter 57
Starting aids, cold weather 4
Starting engine 3
Starting fluid adapter, cold weather 4
Steering 12
Stop, adjustable, remote cylinder 31
Stop, rockshaft control lever 21, 22
Stopping engine 7
Storage, battery 55
Storage, fuel 37
Storage, tractor 64
Sway blocks 23
Syncro-Range transmission 9

T

Taillight 19
Temperature gauge 2
Thermostats 52
Three-point hitch 22-26, 71
Tire inflation charts 16
Tire service 60
Toe-in, front wheel 13
Towing tractor 10
Tractor cab 61
Tractor storage 64
Transmission clutch 59
Transmission-hydraulic
  system 21, 29, 45, 47, 48, 50, 70
Transmission oil temperature gauge 2, 10
Transmission shifting 9
Transport arm, remote cylinder 29
Tread width, front wheel 12
Tread width, rear wheel 13
Trouble shooting 66
Turbocharger 4, 7, 65, 67

V

Valve clearance 54

W

Warning lamps 19, 20, 58
Water temperature gauge 2
Weight, front 18
Weight, rear wheel 17
Wheels, front 12, 44, 47, 60
Wheels, rear 13, 46

MEMORANDA

MEMORANDA

SERVICE LITERATURE AVAILABLE...

TECHNICAL MANUAL

For owners who want to have more knowledge of their machine than is explained in the operator's manual, a detailed, well-illustrated technical manual may be ordered.

The technical manual is a concise service guide for a specific machine.

A partial list of contents includes:

- Specifications and Wear Tolerances
- Diagnosis and Adjustments
- Exploded Illustrations
- Photographs of Special Assembly and Disassembly Procedures
- Hydraulic System Oil Flows
- Wiring Diagrams

FOS MANUALS

If you would like to learn the basic fundamentals of service, a special four-volume set of FUNDAMENTALS OF SERVICE (FOS) manuals is available. Basic principles of Engines, Hydraulic Systems, Power Trains, and Electrical Systems are covered.

These manuals are applicable to most types and makes of machinery. Each manual starts with basic theory; covers operation, diagnosis, and testing; offers glossaries of terms and symbols; and is illustrated with plenty of colorful diagrams.

To order these publications, fill out the form below and mail it with payment to the address given. Please allow adequate time for postal service. Prices include postage, handling, and taxes to anywhere in U.S.A. and Canada.

To: John Deere Service Publications, John Deere Road, Moline, Ill. 61265
Please send me the following . . . .

Title	Order No.	Quantity	Price Each	Total Amount
Technical Manual - 4320 Tractor	TM-1029 B		$8.10	
FOS Manual - Hydraulics	FOS-10B		5.00	
FOS Manual - Electrical Systems	FOS-20B		6.00	
FOS Manual - Engines	FOS-30B		6.50	
FOS Manual - Power Trains	FOS-40B		5.00	
Set of Four FOS Manuals (Above)	FOS-90 Set		19.95	
FOS Manual - Air Conditioning	FOS-57B		3.60	

Cash or check in U.S. dollars enclosed . . . Total ____________

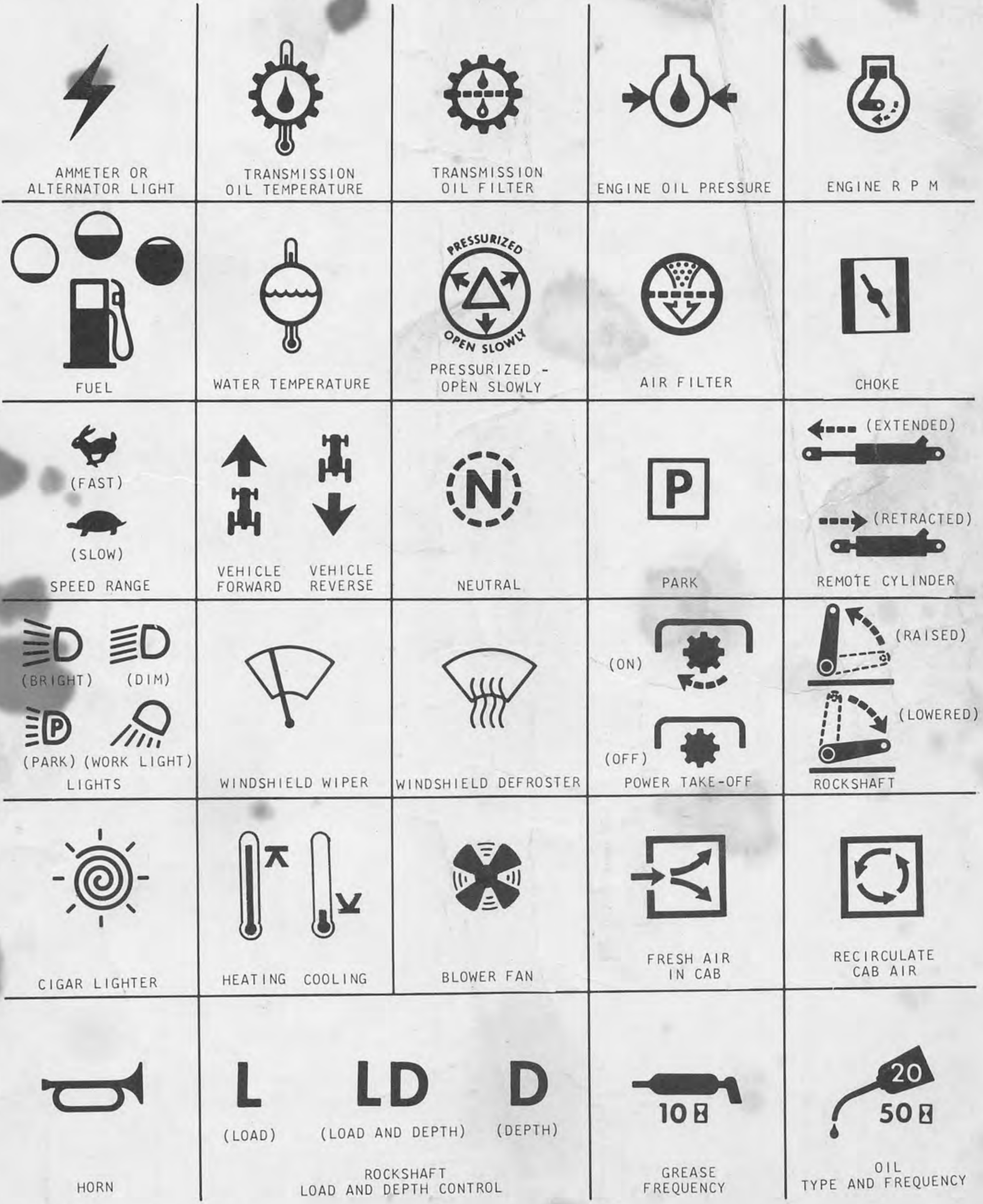
Name ____________ Address ____________

Town ____________ State ____________ Zip ____________

Prices subject to change after Dec. 31, 1970

WORLDWIDE SYMBOLS FOR OPERATOR CONTROLS

Symbols instead of words; that's what John Deere is using to promote worldwide identification of operator controls. Once standardized, they give a quick, positive message anywhere in the world – without translation. Study the symbols below and learn to recognize them at a glance.



R 16768

We're here today, here tomorrow.
Only a few minutes away from you.
With a ready supply of parts, skilled service,
know-how, and just-right finance plans.
You can count on us...anytime.

With John Deere Dealers,
service is a profession...not a sideline.

Litho in U.S.A.